# APFO Technical Definitions

## 3D Color Matrix Meter

Basically, a Nikon pioneered technology first featured on its flagship model, the F5, will expect more models to include this to fully utilize this feature. 3D Color Matrix Meter* evaluates not only each scene's brightness and contrast but, using a special Red Green Blue (RGB) sensor, it also evaluates the scene's colors. Its powerful micro-computer and database together guide it to unequalled exposure control.

*Currently, 3D Color Matrix Meter will work only with F5 & with D-type Nikkor lenses, other new Nikon models should roll out to fully utilize these exclusive features.

## Auto Backlighting Control (ABC)

Auto Backlighting Control, a metering feature that automatically recognizes a subject in back lighting condition and increases the exposure to compensate.

**Accessory Shoes** (often called **Hot Shoe**)

The early flash types were simple metal brackets. To install a flash unit, you just slide the mounting foot of the flash into the accessory shoe. No electrical connection is made camera and flash – it is just a simple and convenient way to attach the flash unit to the camera. Subsequent accessory shoes have been built as part of the camera and usually rest on top of the camera's pentaprism; others are separate items that you mount on the camera body when you need them.

## Aberration

Aberration is the failing in the ability of a lens to produce a true image. There are many forms of aberration and the lens designer can often correct some aberrations only by allowing other aberrations to remain. Generally, the more expensive the lens (more attention to optical quality), the less its aberrations. While no single lens is called a "perfect lens", the "ideal" lens would reproduce a subject in a faithful, clearly defined image on film. Aberrations, which can be divided into six basic faults, affect the ideal performance in an optical system.

a) Spherical aberration – a beam of light passing through a lens parallel to the optical axis converges to form 3 focused images on the film. Spherical aberration is the term for an optical fault caused by the spherical form of a lens that produces different focus points along the axis for central and marginal rays.

b) Curvature of field – this optical defect caused points on an object plane perpendicular to the lens axis to focus on a curved surface rather than a plane.

c) Astigmatism – rays of light from a single point of an object which is not on the axis of a lens fail to meet in a single focus thus causing the image of a point to be drawn out into two sharp lines, one radial to optical axis and another perpendicular to this line in two different planes near the curvature of the field.

d) Coma – causes the image of an off-axis point of light to appear a comet-shaped blur of light. Coma, as well as curvature of field and astigmatism, degenerate the image forming ability of the lens at the rims of the picture.

e) Distortion – even if the first four aberrations were totally eliminated, images could result that still have a distorted appearance. For example, a rectangle may appear as a barrel or pin cushion shaped object.

f) Chromatic aberration – caused by light rays of different wavelengths coming to focus as different distances from the lens. Blue will focus at the shortest distance and red at the greatest distance. Since the natural rays of light are a mixture of colors, each aberration will give a different value corresponding to each color thus producing blurred images.

**Adjustable Camera**

This is commonly called the manual camera. A camera with manually adjustable settings for distance, lens openings, and shutter speeds. (eg Nikon FM series, Carl Zeiss S2, Pentax K1000, Yashica FS-3 super etc.)

**Adjustable-Focal Lens**

A lens that has adjustable distance settings.

**Advanced Photo System**

A new standard in consumer photography developed by Kodak and four other System Developing Companies – Canon, Fuji, Minolta and Nikon – based on a new film format and innovative film, camera and photofinishing technologies. General, APS cameras are more compact in size, weight and embody most of the latest and most advanced technologies available. There are options in various sizes of print out and it will also provide a thumbnail prints (contact sheet) for you to select or preview photos prior to actual printing.

**Automatic Exposure Lock (AE-L)**

Auto exposure lock is a metering feature that is used to hold the exposure setting when used in the automatic mode. This is used most commonly in situations where off centering of the subject in composition and it is wished to retain the exposure setting of the subject and the background exposure reading is different (e.g. back lighting). It is used to hold an automatically controlled shutter speed and/or aperture. It is recommended when the photographer wants to control an exposure based on a scene's particular brightness area with center weighted or spot metering.

**Agitation**

Agitation is keeping the developer, stop bath, or fixer in a gentle, uniform motion while processing film or paper. Agitation helps to speed and achieve even development and prevent spotting or staining.

**Alphabetical Coding**

Some early lenses, such as Nikon and Olympus, use alphabetical coding to illustrate the composition of their lenses. For example, each ZUIKO lens is described with an alphabetical prefix and suffix such as **F . ZUIKO AUTO-S, AUTO-T,** etc. The prefix represents the number of elements in a lens listed in alphabetical order. For example, "A" = 1 element, "B" = 2 elements, "D" = 4 elements, and so forth. "AUTO" signifies automatic diaphragm. The suffix represents the type of lens: "S" = Standard, "W" = Wide Angle and "T" = Telephoto. Other examples of alphabetical coding are: **U**(Uns) 1 element
**B**(Bini) 2 elements
**T**(Tres) 3 elements
**Q**(Quatour) 4 elements
**P**(Pente) 5 elements
**H**(Hex) 6 elements
**S(**Septem) 7 elements
**O**(Octo) 8 elements
**N**(Novem) 9 elements
**D**(Decem) 10 elements

**Ambient Light**

Ambient Light is the available natural light completely surrounding a subject or light already existing in an indoor or outdoor setting that is not caused by any illumination supplied by the photographer i.e. not an artificial light source.

**Angle of View**

The angle of view is the area of a scene that a lens covers or sees. Angle of view is determined by the focal length of the lens. A wide-angle lens (short-focal-length) includes more of the scene (a wider angle of view) than a normal (normal-focal-length) or telephoto (long-focal-length) lens. Currently, the widest view available is 220 degree (Nikon's Nikkor 6mm F2.8 fisheye lens) and the narrowest view is only slightly over 1 degree (Nikon 2000mm F11 Reflex Nikkor).

**A-PEN**

Annealed polyethylene naphthalate is a polyester material used as the base on Advanced Photo System film. It is thinner, stronger and flatter than the acetate base traditionally used in consumer photographic roll films.

**Apochromatic (APO)**

Apochromatic is having the ability to bring all colors of the visible spectrum to a common plane of focus within close tolerances. This usually refers to a lens with superior color correction. Also referred to as ED, LD, SD or UD.

**Aperture**

The aperture is the lens opening. This is the hole or opening formed by the metal leaf diaphragm inside the lens, or the opening in camera lens, through which light passes to expose the film. The size of the aperture is either fixed or adjustable. Aperture size is usually calibrated in *f*- numbers (the larger the number, the smaller the lens opening). Aperture affects depth of field: the smaller the aperture the greater the zone of sharpness, the greater the aperture the zone of sharpness is reduced.

**Aperture Priority**

Aperture Priority is an exposure mode on an automatic or autofocus camera that lets you set the aperture while the camera sets the shutter speed for proper exposure. If you change the aperture, or the light level changes, the shutter speed changes automatically.

**Aperture Ring**

The aperture ring is located on the outside of the lens usually behind the focusing ring, This is linked mechanically to the diaphragm to control the size of the aperture. It is engraved with a set of numbers called f-numbers or f-stops.

**Artificial Light**

Artificial light is from a man-made source, usually restricted to studio photo lamps and domestic lighting. When used to describe film, invariable means these types of lighting (also known as Type A or Type B).

**Aspherical Lens**

A lens whose curved surface does not conform to the shape of a sphere (lenses are usually ground or molded with spherical surfaces). Aspherical lens is used because a spherical surface lens has difficulty in correcting distortion in ultra-wideangle lenses or coma in large-aperture lenses brought about by spherical aberration.

**American Standards Association**

The American Standards Association **(ASA)** is a group that determines numerical ratings of speed for US made photosensitive products (film). In 1982, its role and influence was narrowed down by the establishment of the International Standards Organization **(ISO)**.

**Aspect Ratio**

Aspect Ratio is the ratio of the width to height in photographic prints – 2:3 in 35mm pictures to produce photographs most commonly measuring 3.5 x 5 inches or 4 x 6 inches. Advanced Photo System cameras deliver three aspect ratios as selected by the user.

**AT Attachment (ATA)**

ATA means the camera supports the electrical interface standard defined by the PC Card Association (formerly PCMCIA). This is a mobile computing equivalent of the IDE standard for desktop computers. Most computers have ATA support built-in. ATA is supported by most operating systems like Microsoft Windows 3.1, Windows ’95, Windows CE, IBM OS/2, Apple System 7, etc. ATA is supported by most computer manufacturers including IBM, Compaq, Packard Bell, Dell, Gateway 2000, etc.

**Auto Exposure Bracketing**

Auto Exposure Bracketing performs automatic exposure bracketing with varied shutter speed and/or aperture.

**Autofocus (AF)**

Autofocus is a system by which the camera lens (most popular) or the camera body (only available in Contax AX) automatically focuses the image of a selected part of the picture subject. The autofocus camera revolution first popularized with the launch of Minolta's Maxxium. Currently, most current SLR's are autofocus based.

**AF-I & AF-S lenses**

Nikon's new series of AF lenses involves the integration of coreless motors into their super telephoto lenses. This gives these lenses quick, ultra quiet autofocus operations. The AF-S lens housing is a silent wave motor and is even quicker and quieter in operations than the AF-I.

**Automatic Camera**

An automatic camera has a built-in exposure meter that automatically adjusts the lens opening, shutter speed, or both (program) for proper exposure.

**Automatic Iris**

An automatic iris is a lens diaphragm which is controlled by a mechanism in the camera body coupled to the shutter release. The diaphragm closes to any preset value before the shutter opens and returns to the fully open position when the shutter closes.

**Aperture Value (AV)**

The AV usually refers to the aperture settings.

**B (Bulb) Setting**

B Setting is a shutter-speed on an adjustable camera that allows for time exposures. When set on B, the shutter will stay open as long as the shutter release button remains depressed.

**Background**

Background is the part of the scene that appears behind the principal subject of the picture. The sharpness of the background can be influenced by apertures and shuttle set. In the flash mode, bulb setting usually is set for absorbing more ambient light (background information), so the end result of the exposure won't be pitch dark.

**Backlighting**

Backlighting is light coming from behind the subject, towards the camera lens, so that the subject stands out vividly against the background. Sometimes produces a silhouette effect. Always use something (a hand, a lens shade) to avoid the light falling onto the lens so as to avoid lens flares.

**Back-Printing**

Back-printing is the information printed on the back of a picture by a photofinisher. The system standard requires the printing of frame number, film cassette number and processing date automatically on the back of each Advanced Photo System print; may also include more detailed information, such as customized titles and time and date of picture-taking.

**Barrel Distortion**

Straight lines are bowed in at the edges of the picture frame resembling the sides of a barrel; present in small amounts in some wideangle or wideangle-zoom lenses and uncorrected in fisheye lenses.

**Balance**

Balance is the placement of colors, light and dark masses, or large and small objects in a picture to create harmony and equilibrium. Description applied to color films to indicate their ability to produce acceptable color response in various types of lighting. The films normally available are balanced for daylight (550 – 6000K photo lamps (3400K) or studio lamps (3200K).

**Balanced Fill-Flash**

A type of TTL auto flash operation which used the camera's exposure meter to control ambient light exposure settings integrated with flash exposure control. That is, flash output level is automatically compensated to balance with ambient light, resulting in a better exposure for both subject and background.

**Balanced fill flash operation**

Balanced fill-flash operation is a flash photography technique that balances flash illumination with the scene's ambient light. This operation utilizes the cameras Automatic Balanced Fill Flash System with TTL Multi Sensor and compatible dedicated TTL Speedlight.

**Bellows**

The folding (accordion) portion in some cameras that connect the lens to the camera body (like Mamiya RZ). Also a camera accessory that, when inserted between the lens and the camera body, extends the lens-to-film distance for close focusing or macro photography. Some retain the automatic functions where some have to stop down the lens for manual exposure reading.

**Between-The-Lens Shutter**

A shutter whose blades operate between two elements of the lens. Most medium format cameras like the Hasselblad have on family of lens with shuttle and another without. Most lenses in this family have a smaller maximum aperture than the other family.

**Blowup**

An enlargement; a print made larger than the negative or slide.

**Bounce Lighting**

Bounce lighting is flash or tungsten light bounced off a reflector (such as the ceiling or walls) or attachment that fits on the flash (like the LumiQuest's Pocket Bouncer) to give the effect of natural or available light.

**Bracket Flash**

Bracket flash is often called handle mount flash. It is comprised of one arm of the L-shaped bracket extended under the camera body and uses the camera's tripod socket to mount the camera on the bracket. The vertical arm of the bracket serves as a handle and mounts a flash unit in and an accessory shoe often on the top of the handle portion. There are also other methods of mounting. Flash mounted in a bracket usually require a separate electrical connection between camera body and the flash unit.

**Bracketing**

Bracketing is taking a series of photographs of the same subject at different exposures to insure the "correct" exposure. This is useful when shooting in situations where normal meter reading is difficult to obtain. Taking additional pictures of the subject through a range of exposures-both lighter and darker-when unsure of the correct exposure. Some top cameras have provisions for automatic bracketing. Manually you can bracket by the use of aperture adjustments and/or shutter speed settings.

**Burning-In**

Burning-in is basically a darkroom process that gives additional exposure to part of the image projected on the enlarger easel to make that area of the print darker. This is accomplished by extending the basic exposure time to allow additional image-forming light to strike the area of the print you want to darken while holding back the image-forming light from the rest of the image. This is sometimes called "printing-in".

**Bulb**

A special flashbulb that can be used at certain shutter speeds is called **"FP"** where the initials stand for Focal Plane. Designed for use with focal-plane shutters, these bulbs make a nearly uniform amount of light for a relatively long time. The idea is to turn on the light before the focal-plane shutter starts to open and keep the light on until the shutter is completely closed. Firing delay for flashbulbs is indicated by code letters **"F"** – fast, **"M"** – medium, **"MF"** – medium fast and **"S"** – slow.

**Camera Angles**

Camera angles are various positions of the camera (high, medium, or low; left, right, or straight on) with respect to the subject, each giving a different viewpoint, perspective, or visual effect.

**Camera Shake**

Camera shake is movement of the camera caused by unsteady hold or support, vibration, etc., leading, particularly at slower shutter speeds, to a blurred image on the film. It is a major cause of un-sharp pictures, especially with long focus lenses.

**Candid Pictures**

Candid pictures are unposed pictures of people often taken without the subject's knowledge. These usually appear more natural and relaxed than posed pictures.

**Capacitor**

A capacitor is an electrical component once known as a condenser. It stores electrical energy supplied by a power source and can discharge it faster than the source itself. Used in flash equipment, providing reliable bulb firing even from weak batteries, and supplying the surge needed for electronic flash tubes.

**Cartridge**

A cartridge is a light-tight, factory-loaded film container that can be placed in and removed from the camera in daylight. Some nature of film, like the infra-red film, **MUST** not even try to load or unload film in any possible light existence, absolutely must be done in totally dark conditions to avoid fogging on the film.

**Cassette**

A cassette is a light-trapped film container used with 35 mm cameras. Elliptically shaped film cassette designed especially for the Advanced Photo System that serves as the sealed, leaderless container for all System film whether unexposed, exposed or processed.

**Cast**

Cast is abnormal coloring of an image produced by departure from recommended exposure or processing conditions with a transparency film, or when making a color print. This can also be caused by reflection within the subject as from a hat on to the face.

**CCD**

CCD is an electronic sensor used by all auto focus camera capable of detecting subject contrast. It is also an image-receiving device for video cameras.

**Cds**

Cadmium Sulfide (Cell) is a battery powered, current-modulating, light-sensing cell that was quite popular with lots of camera exposure metering systems and external metering devices. (photo conductive material used in exposure meters as an alternative to selenium-based or silicon blue photocells) Its electrical resistance decreases as the light falling on it increases. Cds meters use current from and external power source such as a battery.

**Chromatic aberration**

Chromatic aberration is a lens aberration producing an overall blurred image. It is the inability of a lens to bring all wavelengths of light (especially red and blue) into the same plane of focus. This is usually present in regular large-aperture telephoto and super-telephoto lenses. It does not improve by stopping down the lens. It is correctable through the use of low Dispersion (ED, LD SD) glass. Basically, this aberration is caused by light rays of different wavelengths coming to focus at different distances from the lens. Blue will focus at the shortest distance and red at the greatest distance. Since the natural rays of light are a mixture of colors, each aberration will give a different value corresponding to each color thus producing a blurred image.

**Contrast Index (CI)**

Contrast Index is a numeric rating indicating the optimum development contrast for negative materials.

**Clearing Agent**

A clearing agent is a chemical that neutralizes hypo in film or paper reducing wash time and helping provide a more stable image.

**Click Stop**

Click stop is a ball bearing and recess (or similar construction) used to enable shutter speeds, aperture values, etc. to be set by touch.

**Close-Up**

A close-up is a picture taken with the subject close to the camera, usually less than two or three feet away, or as close as a few inches.

**Close-Up Lens**

A close-up lens is a lens attachment placed in front of a camera lens to permit taking pictures at a closer distance than the camera lens alone will allow.

**Close Distance Focusing (CRC)**

In general, lenses are designed for maximum performance at infinity. Accordingly, when the lens barrel is fully extended to the shortest focusing distance, resolution is reduced. Although this is negligible for ordinary lenses, it becomes increasingly important in a lens specially designed to close distance photography. Lens designers adopted a system where a mechanism moves certain lens components as a unit automatically correcting for aberrations. This assures high lens performance throughout the focusing range.

**Coated Lens**

A coated lens is a lens covered with a very thin layer of transparent material that reduces the amount of light reflected by the surface of the lens. A coated lens is faster (transmits more light) than an uncoated lens.

**Color Balance**

Color balance is how a color film reproduces the colors of a scene. Color films are made to be exposed by light of a certain color quality such as daylight or tungsten. Color balance also refers to the reproduction of colors in color prints which can be altered during the printing process.

**Color Negative**

Color negative is film designed to produce color images with both tones and colors reversed for subsequent printing to a positive image (usually on paper).

**Color Reversal**

Color reversal is film designed to produce a normal color positive image on the film exposed in the camera for subsequent viewing by transmitted light or projection on to a screen.

**Color Temperature**

Color temperature is a description of the color of a light-source by comparing it with the color of light emitted by a (theoretical) perfect radiator at a particular temperature expressed in degrees Kelvin (K). Thus "photographic daylight" has a color temperature of about 5500K. Photographic tungsten lights have a color temperature of either 3400K or 3200K depending on their construction.

**Compact Flash**

Most digital cameras with PC Card interfaces use a storage technology called Compact Flash. Standard supported by the Compact Flash Association. Compact Flash is ATA compatible and will fit into any Type II or Type III slot when used with a passive adapter.

**Component**

Part of a compound lens consisting of one element (single lens) or more than one element cemented or otherwise joined together. A lens may therefore be described as 4-element, 3-component when two of the elements are cemented together.

**Composition**

The pleasing arrangement of the elements within a scene-the main subject, the foreground and background, and supporting subjects.

**Computerized Flash**

Electronic flash guns that sense the light reflected from the subject, and cut off their output when they have received sufficient light for correct exposure. Most units must be used on or close to the camera for direct lighting only. The camera lens must be set to a specific aperture (or a small range of apertures) determined by the speed of the film in use.

**Condenser**

A condenser is a simple lens used to collect light and concentrate it on a particular area such as an enlarger or projector. It is frequently in the form of two plano-convex lenses in a metal housing. A condenser, normally of the Fresnel type, is used to insure even illumination of the viewing screens on SLR cameras.

**Condenser Enlarger**

A condenser enlarger is an enlarger with a sharp, undiffused light that produces high contrast and high definition is a print. Scratches and blemishes in the negative are emphasized.

**Contact Print**

A contact print is a print made by exposing photographic paper while it is held tightly against the negative. Images in the print will be the same size as those in the negative.

**Contact Printer**

A contact printer is a device used for contact-printing that consists of a light tight box with an internal light source and a printing frame to position the negative against the photographic paper in front of the light.

**Continuous Servo AF Focus**

This is an auto focus term used by Nikon. The AF sensor detection continues as long as the shutter release button is lightly pressed and the reflex mirror is in the viewing position. This is useful when the camera-to-subject distance is likely to change.

**Contrast**

Contrast is the range of difference in the light to dark areas of a negative, print, or slide (also called density). It is the brightness range of a subject or the scene lighting. It may also be explained as tonal difference. More often used to compare original and reproduction. A negative may be said to be contrasty if it shows fewer, more widely spaced tones than the original. Another way to explain this is a difference in visual brilliance between one part of the image and another. Without contrast, there would be no such thing as a visible image. A line in a photograph is visible only because it is either darker or lighter in tone than the background. Every distinguishable part of the image is the result of a contrast in tonal values.

**Contrast Grade**

Contrast Grades are numbers (usually 1-5) and names (soft, medium, hard, extra-hard, and ultra hard) of photographic papers to enable you to get good prints from negatives of different contrast. Use a low-numbered or soft contrast paper with a high contrast negative to get a print that most closely resembles the original scene. Use a high-numbered of an extra-hard paper with a low-contrast negative to get a normal contrast paper.

**Contrasty**

A negative or a print is said to be contrasty when the range of density is higher than it was in the original scene.

**Coma**

Coma is a lens aberration restricted to off axis image points. It is the inability of a lens to render point sources of light near the edges of the frame as circular. The points of light appear as comet-shaped blurs (hence the name coma) with the tails flaring toward the center of the image. This aberration is very difficult to eliminate in wide angle lenses with large maximum apertures. It is improved by stopping down the lens.

**Continuous Servo (Nikon)**

AF focus detection continues as long as shutter release button is lightly pressed and the reflex mirror is in viewing position. This is useful when the camera-to subject distance is likely to change.

**Central Processing Unit (CPU)**

The CPU is the electronic component that controls and electronic product's function. Essentially, all automatic cameras have at least one CPU to control various functions of the camera. Some top models have three to five CPU's to handle individual task functions – some handle the exposure, another handles the auto focus and so on. Some of the newest top models now utilize 8 or 16 bit chips. Newer auto focus lenses have built-in CPU's to relay information relating to focal length, distance info, lens type, to the camera body for exposure to AF processing.

**Cropping**

Cropping is printing only part of the image that is on the negative or slide, usually for a more pleasing composition. In medium format, especially the 6 x 6, some form of cropping is necessary for publishing on A$ magazine format. Cropping may also refer to the framing of the scene in the viewfinder.

**Curvature of Field**

Curvature of field is an optical defect that causes points on an object plane perpendicular to the lens axis to focus on a curved surface rather than a plane.

**C 41**

C 41 is Kodak's standard chemical process for developing color negative film. This is an industrial reference standard.

**D-type AF Nikkor lenses (only applies to Nikon)**

AF Nikkor lenses that send distance information to some of Nikon's top cameras. They are used for 3D Color Matrix Metering or 3D Multi Sensor Balanced Fill Flash (with Nikon 3B 27/SB 26/SB 25 Speedlight). Some third party lens manufacturers are catching up to supply with compatible lenses.

**Defocus Image Control (DC)**

DC is a new type of lens family introduced by Nikon. It is mainly used for portrait photography. The lens enables the precise control of background and foreground blur, resulting in strikingly attractive portraits.

**Darkroom**

A darkroom is a light tight area used for processing films and for printing and processing papers. It is also used for loading and unloading film holders and some cameras. For image purist, the cycle of photography is not complete if the darkroom process is not handled personally.

**Data Disk**

A data disk is a circular, rotating disk at the end of Advanced Photo System film cassettes that functions as a circular bar code, communicating the film speed, type and exposure length through a sequence of reflective bars to an optical sensor in the camera.

**Dedicated Flash**

A dedicated flash is a fully automatic flash that works only with specific cameras. Dedicated flash units automatically set the proper flash sync speed and lens aperture, and electronic sensors within the camera automatically control exposure by regulating the amount of light from the flash. A simple glance can differentiate by identifying the multiple contacts on the hot shoe (the place where the flash is mounted).

**Definition**

Definition is the clarity of detail in a photograph.

**Delayed Action**

This is a mechanism delaying the opening of the shutter for some seconds after the release has been operated. It is also known as a self-timer.

**Densitometer**

A densitometer is an instrument used for measuring the optical density of an area in a negative or print.

**Density**

Density is the blackness of an area in a negative or print that determines the amount of light that will pass through it or reflect from it. It is sometimes referred to as contrast.

**Depth of Field**

Depth of field is the zone of acceptable sharpness in front of and behind the subject on which the lens is focused. It extends approximately one-third in front of and two-thirds behind the in focus subject and is dependent on three factors: aperture, focal length and focused distance. The wider the aperture, the longer the focal length and the closer the focused distance, the less the depth of field, and vice versa. In comparison to a normal lens, wide angle lenses have inherently more depth of field at each f- number and telephoto lenses have less.

Since this element is very important, another way to explain it is the amount of distance between the nearest and farthest objects that appears in acceptably sharp focus in a photograph. Depth of field depends on the lens opening, the focal length of the lens, and the distance from the lens to the subject. It can be described as the zone of sharpest focus in front of, behind, and around the subject on which the lens is focused. It can be previewed in the camera.

**Depth of Focus**

Depth of focus is the distance range over which the film could be shifted at the film plane inside the camera and still have the subject appear in sharp focus; often misused to mean dept of field.

**Developer**

Developer is a solution used to make visible the image produced by allowing light to fall on light-sensitive material. The basic constituent is a developing agent which reduces the light-struck silver halide to metallic silver. Color developers include chemicals which produce colored dyes coincidentally with reduction of the silver halide.

**Developing Tank**

A developing tank is a light tight container used for processing film. It is a darkroom's essential accessory.

**Diaphragm**

A diaphragm is an adjustable device inside the lens which is similar to the iris in the human eye. It is comprised of six or seven overlapping metal blades and is continuously adjustable from "wide open" to "stopped down". It controls the amount of light allowed to pass through the lens and expose the film when a picture is taken. It also controls the amount of depth of field the photograph will have. In lenses designed for the single-lens reflex cameras there are basically two types of diaphragms: automatic and manual.

The automatic diaphragm is the most popular type. It is controlled by a single aperture ring and during viewing and focusing the diaphragm remains wide open, allowing the maximum amount of light to go to the viewfinder for a bright and easy-to-focus image. At the instant of exposure, it stops down automatically to a particular aperture and then reopens to a full aperture immediately after.

The manual preset is used in some specific lenses (PC-Nikkor lenses for example). It is controlled by two separate rings. The preset ring is first set to the desired aperture, then the aperture ring is rotated to stop down the diaphragm manually for metering or prior to taking pictures.

**Diffuse Lighting**

Diffuse lighting is lighting that is low or moderate in contrast, such as an overcast day.

**Diffusing**

Diffusing is softening detain in a print with a diffusion disk or other material that scatters light.

**Diffusion-Condenser Enlarger**

This is an enlarger that combines diffuse light with a condenser system producing more contrast and sharper detail than a diffusion enlarger but less contrasts and blemish emphasis than a condenser enlarger.

**Diffusion Enlarger**

A diffusion enlarger scatters light before it strikes the negative, distributing light evenly on the negative. Detail is not as sharp as with a condenser enlarger. Negative blemishes are minimized.

**Deutche Industrie Norm (DIN)**

DIN is film speed rating defined by the Deutscher Normenausschuss (German standards organization). These are numeric ratings used to describe emulsion speed for German made photosensitive materials. This is the same as ASA and ISO numbers.

**Dispersion**

Dispersion is the property of materials which have a refractive index that varies according to the wavelength of light, i.e., bend the rays of some colors more than others; a prism placed in the path of a ray of white light bends the blue and violet rays more than the orange and red, so that it spreads out or "disperses" the colors as a continuous spectrum.

**Distortion**

Even if all other aberrations were totally eliminated, images could result that still have a distorted appearance. For example, a rectangle may appear as a barrel or pin cushion-shaped object. Distortion is a lens aberration which does not affect the sharpness of the image, but alters the shape of objects. It is the inability of a lens to render straight lines perfectly straight. This does not improve by stopping down the lens. There are two types of distortion: barrel and pincushion.

With a barrel distortion straight lines are bowed in at the edges of the picture frame resembling the sides of a barrel. This is present in small amounts in some wide angle or wide angle-zoom lenses, and uncorrected in fisheye lenses.

Pincushion distortion is the opposite of barrel distortion. Straight lines are bowed in toward the middle to resemble the sides of a pincushion. This is present in small amounts in some telephoto and telephoto-zoom lenses.

**Dodging**

Dodging is holding back the image-forming light from a part of the image projected on an enlarger easel during part of the basic exposure time to make that area of the print lighter.

**Double Exposure**

Double exposure is two pictures taken on one frame of film, or two images printed on one piece of photographic paper. Some cameras can have double exposure level depressed with multiple exposures one even with a motor drive.

**Drop-In-Loading (DIL)**

DIL is a film cassette loading feature in all Advanced Photo System cameras that virtually eliminates film-loading problems by automatically accepting the leaderless cassette and thrusting the film forward to the first unexposed frame without any user intervention.

**Digital Index (DX)**

Digital index is the coding on the film cartridges used to transmit information in relation to film speed, the length of film and the exposure latitude to the camera. Most films (except some technical films) are DX coded. This means you need not worry about wrong setting of the ISO setting of film speed reducing the chances of mistakes.

**DX Data Exchange**

This is an electrical coding system employed in 35 mm format film that communicates film speed, type and exposure length to the camera.

**E6**

E6 is Kodak's standard chemical process for developing Ektachorme or compatible slide films from other film makers other than Kodak.

**Easel**

An easel is a device to hold photographic paper flat during exposure, usually equipped with an adjustable metal mask for framing.

**Effective Aperture**

Effective Aperture is the diameter of the bundle of light rays striking the first lens element that actually pass through the lens at any given diaphragm setting.

**Electronic Flash**

Electronic flash is a light source based on an electrical discharge across two electrodes in a gas-filled tube. This is usually designed to provide light approximating daylight. It is often regarded as an artificial light source in the dark. Electronic flash requires a high voltage, usually obtained from batteries through a voltage-multiplying circuit. It discharges a brief, intense burst of light, usually used where the lighting on the scene is inadequate for picture-taking. They are generally considered to have the same photographic effect as daylight. Most flash will correct the color temperature back to 5000 Kelvin – the daylight color. You can use filters mounted on the flash head for some specific effects or to alter the color if necessary. Modern flash has multiple TTL flash exposure control functions and even extend to auto focus control. Some specialized flash are high speed repeating flash which can be used for a stroboscopic effect. UV-flash is used for ultra violet light photography.

**Electronic Image Stabilizer (EIS)**

EIS is a feature that minimizes the effect of camera shake. This was originally designed for video cameras. Canon has transferred the technology over to it EF lenses.

**Element**

This is a single lens used in association with others to form a compound construction.

**Emulsion**

Emulsion is micro-thin layers of gelatin on film in which light-sensitive ingredients are suspended. Light triggers the emulsion to create a chemical reaction to create a chemical reaction resulting in a photographic image. Emulsion is basically the suspension of light-sensitive silver salts in gelatin.

**Emulsion Side**

Emulsion side is the side of the film coated with emulsion. In contact printing and enlarging, the emulsion side of the film (dull side) should face the emulsion side of the photo paper (shining side).

**Enhanced Back-Printing**

Enhanced back-printing is an Advanced Photo System feature available in some system cameras that enables users to encode detailed information at the time of picture taking, such as the date and time of exposure, camera settings, roll title or other custom information, for subsequent printing onto the back of their photographs.

**Enlargement**

An enlargement is a print that is larger than the negative or slide; also know as a “blowup”.

**Enlarger**

An enlarger is a device consisting of a light source, a negative holder, a lens, and means of adjusting these to project an enlarged image from a negative onto a sheet of photographic paper.

**Exposure Value (EV)**

Exposure value is a method of quantifying scene brightness. Most of these values apply to metering cells (how high or low). A metering that can handle from EV1-EV21 means a metering system that can measure brightness level from just above the light level of candle light to a brightly sunlit scene on a beach. The camera can be used only within EV range of the exposure meter.

**Existing Light**

Existing light means available light, and strictly speaking, means all natural lighting from moonlight to sunshine. For photographic purposes, existing light is the light that is already on the scene or project and includes room lamps, fluorescent lamps, spotlights, neon signs, candles, daylight though windows, outdoor scenes at twilight or moonlight, and artificially illuminated scenes after dark.

**Exposure**

Exposure is the quantity of light allowed to act on a photographic material. It is a product of the intensity (controlled by the lens opening) and the duration (controlled by the shutter speed and or enlarging time) of light striking the film or paper. It is the act of allowing light to reach the light-sensitive emulsion of the photographic material. It also refers to the amount (duration and intensity) of light which reaches the film.

**Exposure Bracketing**

Exposure bracketing is shooting the same subject at a range of different exposures. Some cameras provide Auto Exposure Bracketing/Flash Bracketing.

**Exposure Compensation**

Exposure compensation for available light is activated by changing the shutter speed and/or lens aperture. This is done by using AE L AF-L the (Auto Exposure/Autofocus Lock) button or exposure compensation button, or by Auto Exposure Bracketing. In flash photography, with a dedicated TTL Speedlight, exposure compensation can also be performed by varying the amount of flash output. Camera-originated exposure compensation affects both the foreground subject and the background. Variations in flash output amount affect only the foreground.

**Exposure Factor**

The exposure factor is a figure by which the exposure indicated for an average subject and/or processing should be multiplied to allow for non-average conditions. This is usually applied to filters, but occasionally to lighting and processing. It is not normally used with through-the-lens exposure meters.

**Exposure Latitude**

Exposure latitude is the range of camera exposures from underexposure to overexposure that will produce acceptable pictures from a specific film.

**Exposure Meter**

An exposure meter is an instrument with a light-sensitive cell that measures the light reflected from or falling on a subject and is used as an aid for selecting the exposure setting. **It is the same as a light meter.**

**Extension Bellows**

Extension bellows are a device used to provide the additional separation between lens and film that is required for close-up photography consisting of extendible bellows and mounting plates at the front and rear to fit the lens and camera body respectively.

**Extension Tubes**

Extension tubes are metal tubes used to obtain the additional separation between lens and film for close-up photography. They are fitted with screw thread or bayonet mounts to suit various lens mounts.

**Extra Low Dispersion (ED)**

ED usually refers to glass type. Glass with ED properties indicates special rare earth glass or specially formulated glass that limits or corrects light rays passing through the lens elements to achieve all spectrums of colors to fall on the same plane of focus, especially the red and blue spectrums, and usually is applied to longer focal length lenses where the problem is more serious. ED was first popularized by Nikon's Nikkor lens line (gold lining in front part of lens). Pentax and Olympus use the same name as Nikon. Cannon's version is called LD (with red lining and white lens). Minolta use APO. Independent lens makers like Tamron use LD, Sigma uses APO and Tokina's version is SD APO. All these trade names are basically performing the same function.

**F-number**

F-number refers to the numbers on the lens aperture ring and the camera's LCD (where applicable) that indicates the relative size of the lens aperture opening. The f-number series is a geometric progression based on changes in the size of the lens aperture as it is opened and closed. As the scale rises, each number is multiplied by a factor of 1.4. The standard numbers for calibration are 1.0, 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, 22, 32, etc. Each change results in a doubling or halving of the amount of light transmitted by the lens to the film plane. This is basically calculated from the focal length of the lens divided by the diameter of the bundle of light rays entering the lens and passing through the aperture in the iris diaphragm.

**f-stop**

F-stop is useful for determining the maximum flash to-subject distance for flash photography.

**Fellow of the Royal Photographic Society of Great Britain (FRPS)**

FRPS is a title granted to salon photographers. It is a recognition that is a photographer's standard in the photographic field.

**Fill-Flash**

Fill-flash is a method of flash photography that combines flash illumination and ambient light, but does not attempt to balance these two types of illumination. (see balanced fill flash)

**Film**

Film is a photographic emulsion coated on a flexible, transparent base that records images or scenes.

**Film Base**

Film base is a flexible support on which light sensitive emulsion is coated.

**Film Presence Indicator Flag**

This is a feature on Advanced Photo Systems cameras that indicate the film cassette has been loaded properly.

**Film Safe**

Film safe describes the fact that the film is sealed in the cassette. This avoids the danger of exposure to light before shooting and mishandling of negatives after shooting.

**Film Status Indicators**

Film status indicators are the four icons on Advanced Photo System film cassettes that show the film status – unexposed, partially exposed, fully exposed or processed.

**Film Speed**

Film Speed is indicated by a number such as ISO 100 or ISO 400, etc. This indicates the sensitivity of a given film to light - the higher the number, the more sensitive or faster (and grainer) the film.

**Filter**

A filter is a colored piece of glass or other transparent material used over the lens to emphasize, eliminate, or change the color or density (ND) of the entire scene or certain areas within the scene. Technically, it is explained as a piece of material which restricts the transmission of radiation. It is generally colored to absorb light of certain colors. It can be used over light sources or over the camera lens. Camera lens filters are usually glass either dyed or sandwiching a piece of gelatin in a screw-in filter holder.

**Finder**

Finder (also known as viewfinder and projected frame) is a viewing device on a camera to show the subject area that will be recorded on the film.

**Fisheye lens**

A fisheye lens is an ultra-wide lens giving 180 angle of view. Basically produces a circular image of 35 mm and 5-9 mm lenses showing the whole image. 15-17 mm lenses give a rectangular image fitting just inside the circle, thus representing 180 across the diagonal.

**Fixed-Focus**

Fixed-focus describes a non-adjustable camera lens set for a fixed subject distance.

**Fixed-Focus Lens**

This is a lens that has been focused in a fixed position by the manufacturer. The user does not have to adjust the focus of this lens. This applies to most entry or disposable cameras.

**Fixing Bath**

Fixing bath is a solution that removes any light-sensitive silver-halide crystals not acted upon by light or developer. This leaves a black-and-white negative or print unalterable further action of light. It is also referred to as hypo.

**Fixer**

Fixer is a solution, usually based on sodium thiosulphate, in which films or prints are immersed after development to convert the unexposed silver halides in the emulsion to soluble products that can be washed out. This prevents subsequent deterioration of the image.

**FL (Flourite)**

Fluorite is a low dispersion mineral used as a substitute for glass in some highly corrected long focal length lenses. Canon uses most of these properties on it EF-L series long telephoto lenses. It is also referred to as "ED".

**Flash**

Flash is the artificial light source in the dark. Electronic flash requires a high voltage, usually obtained from batteries through a voltage-multiplying circuit. It has a brief, intense, burst of light, usually used where the light on the scene is inadequate for picture-taking. They are generally considered to have the same photographic effect as daylight. Most flash will correct the color temperature back to 5000 Kelvin – the daylight color. You can play around with filters mounted on the flash head for some specific effects or to alter the color if necessary. Modern flash have multiple TTL flash exposure control function and even extend to autofocus control. Some specialized flash are high speed repeating flash which can be used for stroboscopic effect

**Flash Bracket**

Flash bracket is often called handle mount flash. It is comprised of one arm of the L-shaped bracket extended under the camera body and uses the camera's tripod socket to mount the camera on the bracket. The vertical arm of the bracket serves as a handle and mounts a flash unit in an accessory shoe, often on top of the handle portion (there are also other methods). Flash mounted in a bracket usually requires a separate electrical cord to make the electrical connection between camera body and flash unit.

**Flashbulb**

A flashbulb is a light source based on ignition of combustible metal wire in a gas filled transparent envelope. Popular sizes are usually blue-coated to give light approximating daylight. Flashbulbs come in various sizes and types. All work by burning metal foil in an oxygen atmosphere within the glass bulb. Because the light is caused by combustion inside the glass envelope, light intensity increases from zero as combustion begins, reaches a peak value, and then falls off as combustion ends. The flash unit if fired or triggered by the shutter mechanism in the camera. For some flashbulb types in some cameras, the shutter mechanism fires the flash and then waits for a specified time delay before it actually opens the shutter. This delay is to allow the flashbulb to get up to full brightness.

**Flashcube**

A flashcube is a self-contained unity comprising four small flashbulbs with their own reflectors. It is designed to rotate in a special camera socket as film is wound on. It can be used in a special adapter on cameras without the socket, but will not rotate automatically.

**Flash Exposure Bracketing**

Flash exposure bracketing enables a photographer to automatically bracket exposures at varied flash output levels in TTL auto flash shooting without changing the shutter speed an/or aperture. This is one of the top flash features that can be found on some higher ranked cameras.

**Flash Synchronization**

Flash synchronization is when the timing of the flash coincides with the release of the camera's shutter. There are two types of synchronization: Front-Curtain Sync – fires the flash at the start of the exposures, and Rear-Curtain Sync – fires the flash at the end of the exposure.

**Flash Sync Speed**

Flash sync speed with a focal-plane shutter is measured from the instant the first curtain is released to begin its travel across the frame until the instant the second curtain is released to begin its travels across the frame. When the first curtain reaches the end of its travel, the film frame is uncovered as far as the first curtain is concerned, so it closes the electrical contacts for X sync and fires the flash instantly. It is the shutter speed at which the entire film frame is exposed when the flash is fired in flash shooting. Most modern cameras with a vertical travel shutter curtain have faster flash sync speed such as 1/250 seconds (or slower). Some top camera models, like Nikon F5, are changeable to 1/300 seconds with a custom setting.

**Flash Output Level Compensation**

Flash output level compensation is a control used to adjust a TTL auto flash operation enabling an increase or decrease of flash output to lighten or darken the flash effect.

**Flash Shooting Distance Range**

Flash shooting distance range is the distance range over which a flash can effectively provide light. It is controlled by the amount of flash output available. Each automatic Speedlight's flash output varies from maximum duration to minimum duration. Close-up subjects will require lower (to minimum) output while more distant subjects will require greater light (to maximum) output. The flash shooting distance range will vary with the aperture and film speed, etc. (see guide number)

**Flash Memory Card**

Flash memory card is a storage medium used by most digital cameras. It resembles film in conventional photography.

**Flare**

Flare is an overall decrease in contrast caused by light being reflected off, instead of transmitted through, a lens surface. This is controllable through the use of multilayer coating of individual lens elements in a lens. Flare is aggravated by unclean lens surfaces on front and rear lens elements or filters.

**Flat**

Flat refers to too low contrast. This means the range in density in a negative or prints is too short, or in some cases, a reflection of the low resolution produced by a low quality lens.

**Flat Lighting**

Flat lighting produces very little contrast or modeling on the subject. It produces a minimum of shadows.

**Flexible Program**

The flexible program function temporarily shifts an automatically selected shutter speed/aperture combination while maintaining correct exposure i.e. a desired shutter speed or aperture can be selected in Programmed Auto exposure mode.

**f/stop**

f/stop is a fraction which indicates the actual diameter of the aperture. The "f" represents the lens focal length, the slash means divided by, and the word "stop" is a particular f-number. For example, with a 50mm f/1.4 lens, the actual diameter of its maximum aperture is 50mm divided by 1.4 or 35.7mm across. As the numerical value of the f/stop increases, the aperture decreases in size.

**Focal Length**

Focal length is the distance between the film and the optical center of the lens when the lens is focused on infinity. The focal length of the lens on most adjustable cameras is marked in millimeters on the lens mount. In 35mm-format cameras, lenses with a focal length of approximately 50mm are called normal or standard lenses. Lenses with approximately less than 35mm focal length are called wide angle lenses. Lenses with approximately more than 85mm focal length are called telephoto lenses. Lenses which allow the user to continuously vary the focal length without changing focus are called zoom lenses.

**Focal Plane Flashbulb (FP)**

An FP is a flashbulb that can be used at certain shutter speeds. It is designed for use with focal-plane shutters. These bulbs make a nearly uniform amount of light for a relatively long time. Generally, FP flashbulbs can be used with any shutter speed and any firing delay except "X sync". The FP bulb will extinguish during exposure intervals longer than 1/60 second but enough light will have reached the film to make the exposure.

**Focal-Plane Shutter**

A focal-plane shutter is an opaque curtain containing a slit that moves directly across in front of the film in a camera and allows the image-forming light to strike the film.

**Focus**

Focus is the adjustment of the distance setting on a lens to define the subject sharply. It is the act of adjusting a lens to produce a sharp image. In a camera, this is effected by moving the lens bodily towards or away from the film or by moving the front part of the lens towards or away from the rear part, thus altering the focal length.

**Focus Range**

Focus range is the range within which a camera is able to focus on the selected picture subject. An example would be 4 feet to infinity.

**Focus-Priority for Autofocus**

The shutter cannot be released until the subject is in focus. Focus-Priority is given to Single Servo AF mode while Release-priority is given to Continuous Servo AF. Using Custom Setting, however, you can change the priority to Release-Priority Single Servo AF or Focus-Priority Single Servo AF.

**Focus Tracking**

Focus Tracking enables the camera to analyze the speed of the moving subject according to the focus data detected, and to obtain correct focus by anticipating the subject's position and driving the lens to that position at the exact moment of exposure. This is basically a Nikon and Canon feature. Nikon's F5 is the fastest.

**Fogging**

Fogging is the darkening of discoloring of a negative or print, or lightening or discoloring of a slide, caused by exposure to non-image forming light to which the photographic material is sensitive. It is also caused by to much handling in air during development, over-development, outdated film or paper, or storage of film or paper in a hot, humid place.

**Format**

Format is the actual size of the photograph, either slide or negative, produced by a camera; in 35mm photography, the picture measures 24mm x 36mm and has a diagonal of 43mm. The new APS (Advanced Photo System) has several new formats including panorama. It can also be explained as shape and size of the image provided by the camera or presented in the final print or transparency. It is governed in the camera by the opening at the rear of the body over which the film passes or is placed.

**Foreground**

The foreground is the area between the camera and the principal subject.

**Front-Curtain Sync**

The flash fires an instant after the front curtain of a focal plane shutter has completed its travel across the film plane. This is the way the camera operates with the flash sync mode at Normal Sync. (see "Rear-Curtain Sync")

**Frame**

A frame is one individual picture on a roll of film. It can also apply to an object that can be utilized (tree branch, arch, etc.) to frame a subject in a composition.

**Frames per Second (fps)**

Frames per second describe how many frames the motor drive or winder can handle automatically per second. It also applies to video, animation and movie cameras.

**Free Working Distance**

In close-up photography, the distance between the front to the lens and the subject is referred to as free working distance. The distance increases as the focal length increases. It is an important consideration when photographing shy or dangerous subjects. It is also important when using supplementary illumination.

**Fresnel**

Fresnel is a pattern of a special form of condenser lens consisting of a series of concentric stepped rings. Each ring is a section of a convex surface which would, if continued, form a much thicker lens. It is used when focusing screens to distribute image brightness evenly over the screen.

**Frontlighting**

Frontlighting is light shining on the side of the subject facing the camera.

**Full Aperture Metering**

Full aperture metering is a TTL metering system in which the camera simulates the effect of stopping down the lens when the aperture ring is turned, while leaving the diaphragm at full aperture to give full focusing screen brilliance. The meter must be programmed with the actual full aperture and diaphragm ring setting.

**Gallium Photo Diode (GPD)**

GPD are metering cells for measuring exposure using gallium arsenide-phosphide.

**Ghost Image**

Ghost images are bright spots of light, often taking the shape other aperture, which appear in the camera viewfinder or in the final photograph when a lens is pointed at a bright light like the sun. It is controllable through the use of multilayer coating of the lens elements.

**Grain**

Grain is minute metallic silver deposits, forming in quantity, on the photographic image. The individual grain is never visible, even on an enlargement, but the random nature of their distribution in the emulsion causes over-lapping, or clumping, which can lead to graininess in the final image.

**Graininess**

Graininess is the sand-like or granular appearance of a negative, print, or slide. Graininess becomes more pronounced with faster film and with the degree of enlargement.

**Grey Card (18% Grey Card)**

Grey card is the tone used as representative of mid-tone of an average subject. The standard grey card reflects 18% of the light falling on it.

**Guide Number (GN)**

GN is used to express the power output of the flash nit. It indicates the power of the flash in relation to ISO film speed. GN is quoted in either meters or feet. They are used to calculate the f/stop for correct exposure as follows: multiply proper flash exposure aperture by the subject distance. Flash-to subject distance equals guide number divided by f/stop. F/stop equals guide number divided by flash-to-subject distance.

**"H"-Format**

"H"-Format is one of the three selectable Advanced Photo System print formats. It is identical to the 9:16 aspect ratio used in high-definition television (HDTV). It is suitable for wider shots than usual, such as group shots, and produces prints of 3.5 x 6 inches or 4 x 7 inches.

**Halation**

Halation is the production of "halos" around bright spots in an image. This is produced by light reflecting from the back of film-base. General film bases are given a light absorbing coat, the anti-halation back, to prevent this.

**Handle Mount Flash**

Handle mount flash is also referred to as bracket flash. It is comprised of one arm of the L-shaped bracket extended under the camera body and used the camera's tripod socket to mount the camera on the bracket. The vertical arm of the bracket serves as a handle and mounts a flash unit in an accessory shoe often on top of the handle portion (there are also other methods). Flash mounted in a bracket usually requires a separate electrical cord to make the electrical connection between the camera body and the flash unit.

**Hi 8**

Hi 8 is a video recording format. It also refers to High Band 8mm format.

**High Contrast**

High contrast refers to a wide range of density in a print or negative.

**Highlights**

Highlights are small, very bright parts of an image or object. Highlight should generally be pure white. The term is sometimes used to describe the lightest tones of a picture, in which case, they may need to contain some detail.

**Hot Shoe**

A hot shoe usually rest around the pentaprism of the camera (some were designed around the film rewind knob). It has an electrical contact which is mated with a contact in the mounting foot of the flash unit. This allows the camera to fire the flash at the proper time without any other electrical connections between flash and camera. It is the fitting on a camera that holds a small portable flash. It has an electrical contact that aligns with the contact on the flash unit's "foot" and fires the flash when you press the shutter release. This direct flash-to-camera contact eliminated the need for a PC cord. It is sometimes referred to as an accessory shoe. Modern flash demands more than just the main electrical contact and often has more dedicated functions such as TTL control, viewfinder ready light, etc.

**Hyperfocal Distance**

Hyperfocal distance is the distance of the nearest object in a scene that is acceptably sharp when the lens is focused on infinity.

**Image**

Image is the two-dimensional reproduction of a subject formed by a lens. When formed on a surface, i.e. a ground-glass screen, it is a real image. In space, i.e. when the screen is removed, it is an aerial image. The image seen through a telescope optical viewfinder, etc. cannot be focused on a surface without the aid of another optical system and is a virtual image.

**Incident light**

Incident light is light falling on a surface as opposed to the light reflected by it.

**Infinity**

Infinity is infinite distance. In practice, infinity is a distance so great that any object at that distance will be reproduced sharply if the lens is set at its infinity position, i.e. one focal length from the film.

**Interchangeable Lens**

An interchangeable lens is designed to be readily attached to and detached from a camera.

**Interspersed Aspect Ratio**

Interspersed aspect ratio is a basic requirement of certified photofinishers and certified photofinishing equipment. It specifies the three system print format – C, H and P – that users select during picture-taking that must be available at photofinishing.

**Inverted telephoto lens**

An inverted telephoto lens is constructed so that the back focus (distance from rear of lens to film) is greater than the focal length of the lens. This construction allows room for mirror movement when short focus lenses are fitted to SLR cameras.

**Iris**

Iris (or iris diaphragm) is a device consisting of thin overlapping metal leaves pivoting outward to form a circular opening of variable sizes to control light transmission through the lens.

**ISO Speed**

ISO Speed is the international standard for representing film sensitivity. It is the emulsion speed (sensitivity) of the film as determined by the standards of the International Standards Organization. In these standards, both arithmetic (ASA) and logarithmic (DIN) speed values are expressed in a single ISO term. For example, a film with a speed of ISO 100/21 degrees would have a speed of ASA 100 or 21 DIN. The higher the number, the greater the sensitivity, and vice versa. A film speed of ISO 200 is twice as sensitive as ISO 100 and half that of ISO 400 film.

**IX Information Exchange**

IX information exchange is the ability of Advanced Photo System film to communicate with devices and devices to communicate with film. This can be accomplished optically or magnetically using a thin magnetic layer on the film that records digital data.

**Japan Camera Inspection and Testing Institute (JCII)**

JCII is an organization in Japan to monitor export quality of Japanese made cameras. It was founded in 1954.

**K 14**

K14 refers to Kodak's chemical process for developing Kodachrome slides.

**Kelvin (K)**

Kelvin (K) is a scale used to measure the color temperature. 5000 K refers to normal daylight.

**Latent Image**

Latent image is the invisible image left by the action of light on photographic film or paper. The light changes the photosensitive salts to varying degrees depending on the amount of light striking them. When processed, this latent image will become a visible image either in reversed tones (a negative) or in positive tones (a color slide).

**Leader (Film Leader)**

Leader is the part of the film attached to the camera take-up spool. 35 mm film usually has a leader shaped as it was originally designed for the bottom loading Leica cameras. Most cameras simply need a short taper.

**Lens**

A lens is one or more pieces of optical glass, or similar material, designed to collect and focus rays of light to form a sharp image on the film, paper, or projection screen.

**Lens Aberration**

Lens aberrations are optical flaws which are present in small amounts in all photographic lenses. They are made up of chromatic aberrations, spherical aberrations, curvature of field, and distortion, etc. A perfect lens would show the image of a point as a point, and a straight line as a straight line. In reality, lenses are never perfect – they reproduce a point as a patch and a straight line as a curved band. Most of the trouble is caused by aberrations inherent in the lens construction. It is the job of the lens designer to control most of the aberrations, as much as possible, by combining a number of single lenses so that the aberrations of one lens tend to be cancelled out by opposing aberrations in the others.

**Lens Shade**

A lens shade is a collar or hood at the front of a lens that keeps unwanted light from striking the lens and causing image flare. It may be attached or it may be detachable. It should be sized to the particular lens to avoid vignetting.

**Lens-Shutter Camera**

A lens-shutter camera is a camera with the shutter built into the lens. The viewfinder and picture taking lens are separate.

**Lens Speed**

The lens speed is the largest lens opening (smallest f-number) at which a lens can be set. A fast lens transmits more light and has a larger opening than a slow lens. It is determined by the maximum aperture of the lens in relation to its focal length. The “speed” of a lens is relative. A 400 mm lens with a maximum aperture of f/3.5 is considered extremely fast, while a 28 mm f/3.5 lens is thought to be relatively slow.

**Light Emitting Diode (LED)**

LED are light producing transistors used to display dots, numeric and text, in viewfinders. LED is slowly being replaced by LCD display.

**Lighting Ratio**

Lighting ratio is the ratio of the brightness of light falling on the subject from the main (key) and other (fill) lights. A ratio of about 3:1 is normal for color photography. Greater ratios may be used for effect in black-and-white photography.

**Lighting Aperture**

Lighting aperture is the actual size of the aperture formed by the iris diaphragm at any setting. It determines, but usually differs from, the effective aperture.

**Liquid Crystal Display (LCD)**

LCD is an electronically generated text both numeric and symbols. Before the popularity of the LCD the LED was the most common method. LCD consumes only one fifth (1/5) of the power of LED and thus has wider application in photography. The only problem with LCD is that it will turn dark at very high temperatures (returns to normal when it cools down) and it will fade over an extended period of time. It is most commonly used on cameras that show such information as remaining exposures, flash status and aspect ratio selected.

**Long Focus**

Long focus refers to a lens of relatively long focal length designed to provide a narrower angle of view than the normal or standard lens. It generally has an angle of view expressed on the diagonal of the film format of about 45 degrees. The long focus lens takes in less of the view in front of it but on and enlarged scale.

**Low Dispersion Glass (LD)**

LD, UD (ultra low dispersion), or SD (super low dispersion) refers to optically superior glass. Dispersion sometimes also refers to as “color Fringing”.

**Lux**

Lux is a measurement of light intensity. One lux is video means light level of candle light.

**Macro Lens**

A macro lens provides continuous focusing from infinity to extreme close-ups, often to a reproduction ratio of 1:2 (half life-size) or 1:1 (life-size).

**Macro Photography**

Macro photography is the process of taking photographs of small objects with regular photographic lenses at reproduction ratios of 1X or greater. It is also referred to as “photomacrography”.

**Magazine**

A magazine is a light tight metal container (cartridge) that holds 135 film (cylindrical magazine). When applied to medium format, magazine back refers to the interchangeable container that holds the film for mounting on the back of the camera for exposure.

**Magicube**

Magicube refers to a special form of flashtube which is fired by mechanical (not electrical) means. It can be used only on cameras fitted with the appropriate socket.

**Magnification Ratio**

Magnification ratio expresses the greatest film magnifying power of the lens. It is commonly used on the macro setting of zoom lenses, macro lenses, or with bellows.

**Manual**

If the user selects both shutter speed and aperture the operation is said to be manual. The user can choose to either follow or ignore the meter's recommendations to achieve a desired effect on the exposure.

**Manual Flash**

Manual flash refers to manual control of the flash output in manual flash mode. This is unlike auto flash mode where flash output power varies automatically according to the selected aperture. Some Speedlights provide selectable manual outputs (full, ½, ¼, 1/8, 1/16 etc), while others provide full manual output only.

**Manual Iris**

Manual iris refers to a diaphragm controlled directly by a calibrated ring on the lens barrel.

**Matrix Metering System**

Matrix metering system refers to an exposure metering system using a multi-segment sensor and computer. With the classic techniques of evaluating to 18% reflectance, factors such as brightness and contrast are primarily used to determine exposure. In addition, it is essential to evaluate each scene's esthetic factors, such as color, to get the best exposure.

**Maximum Aperture**

Maximum aperture is the widest aperture which the diaphragm is capable of opening up to. It is engraved on the lens in this manner: 1:1.4.

**Micro Lens**

A micro lens is a lens for close-up photography. It is designed to focus from infinity down to a reproduction ration of 1:2, or with a matched extension ring or teleconverter, down to 1:1. It is available in normal or telephoto focal lengths to provide a variety of free working distances.

**Microprism**

A microprism is a minute glass or plastic structure of multiple prisms set in a viewfinder screen to act as a focusing aid. It breaks up an out-of-focus subject into a shimmer, but images a focused subject clearly. It will not work satisfactorily at lens apertures smaller than f5.6.

**Mid-Roll Change**

Mid-roll change is a feature available on some APS cameras that enables users to remove a partially exposed film cassette and insert it again later starting shooting exactly where it left off.

**Mini-Lab**

A mini-lab refers to a 1 hour color lab. It is a photofinishing operation that operates on a retail level, serving consumers directly and processing film on-site.

**Mirror Lens (Reflex Lens)**

A mirror lens is a lens in which some (usually two) of the elements are curved mirrors. This construction produced comparatively lightweight short fat long focus lenses. They cannot be fitted with a normal diaphragm.

**Modeling**

Modeling is the representation by lighting of the three-dimensional nature of an original in a two-dimensional reproduction.

**Modulation Transfer Function (MTF)**

MTF is the way people use to measure a lens's ability to hold diminishing details of a subject. Because everything is done electronically, eliminating any errors in human judgment or vision, the results can be repeatble to counter check earlier test. A precise comprehensive rating is made possible by incorporating huge amounts of data into a singe reading. It is very fast and permits its use on just out from production lenses.

**Monitor Pre-flash(es)**

When performing Automatic Balanced Fill-Flash with TTL Multi Sensor, the Speedlight fires a series of scarcely visible pre-flashes to enable the camera's computer to pre-analyze the scene. The TTL Multi Sensor inside the camera body reads the amount of reflected light, then the camera's microcomputer determines the area of the TTL sensor to be used for flash output control and adjusts the flash output level. The Monitor-Pre-flashes are visible but not recognizable.

**Motor Drive**

A motor drive is a mechanism for advancing the film to the next frame and recocking the shutter. It is activated by an electronic motor u usually powered by batteries. It is popular for action-sequence photography and for recording images by remote control.

**Multilayer Coating**

Multilayer coating is depositing multiple coats of anti-reflective materials on a lens surface to reduce ghost images and flare produced by internal reflections and insure faithful color rendition. In the Nikon Integrated Coasting system, the number of layers is determined by the type of optical glass and the position of the element in the lens design.

**National Television Standards Committee (NTSC)**

NTSC provide the standards for video broadcasting and recording in the Untied States and Japan. PAL is the standard in Great Britain and the Commonwealth countries. SECAM is the standard in many European countries.

**Neutral Density (ND)**

ND refers to filtration that can effectively reduce the amount of light that passes to the film. In some filters, half ND filters can be very effective to lower the contrast. ND filters can be the only way to manipulate the exposure when using fixed aperture reflex lenses. Some 617 format are provided with a central ND filter.

**Negative**

Negative refers to the developed film that contains a reversed tone image of the original scene.

**Negative Holder**

A negative holder is a device used to hold the negative in the proper position in an enlarger.

**Nickel Cadmium (Nicd or NICAD)**

Nickel Cadmium is the backbone of most rechargeable batteries. It is not as long lasting as alkaline, but has a better resistance to the cold than alkaline. When the batteries power is drained out, it will turn "flat" right away. Most high speed motor drives handle best when using Nicd batteries.

**Nickel Metal Hydride (NiMh)**

NiMh is a new generation of the Nicd battery. The Nikon highest speed 8 fps is achieved using this type of battery.

**Normal Lens**

A normal lens makes the image in a photograph appear in perspective similar to the perspective of the original scene (approximately 45 degrees). A normal lens has a shorter focal length and a wider field of view than a telephoto lens, and a longer focal length and a narrower field of view than a wide-angle lens. Normal lenses correspond to that portion of human vision where we can discern sharp detail. Technically it is defined as a lens whose focal length is approximately equal to the diagonal of the film frame. In 35 mm photography, the diagonal measures 43 mm, but in practice, lenses with focal lengths from 50 mm to 60 mm are considered normal.

**Off-The-Film-Metering**

Off-The-Film-Metering refers to a meter that determines exposure by reading light reflected from the film during picture-taking. It is a way of metering meters light reflected off the film plane during exposure. Pioneered by Olympus on its OM2n, which is a real time metering for normal exposure and flash exposure. Most flash mode for modern cameras are now with OFT flash mode.

**Optical Transfer Function (OFT Test)**

OFT Test evaluates lens performance in terms of resolving power, contrast rendition and aberrations. Most believe the test is the only way to determine how good a lens is in the lab.

**Orthochromatic (Ortho)**

Ortho refers to film sensitive to blue and green light.

**Overexposure**

Overexposure is a condition in which too much light reaches the film producing a dense negative or a very bright/light print or slide.

**Pan Format**

Pan format is one of the three selectable Advanced Photo System print formats. It is a 1:3 aspect ratio that produces prints of 3.5 x 10.5 inches up to 4.5 x 11.5 inches. It is suitable for panoramic shots or tall or wide subjects.

**Panchromatic (Pan)**

Pan designates film that records all colors and tones of about the same relative brightness that the human eye sees in the original scene. It is sensitive to all visible wave-lengths.

**Panning**

Panning refers to moving the camera so that the image of a moving object remains in the same relative position in the viewfinder as you take the picture. The eventual effect creates a strong sense of movement.

**Panorama**

Panorama is a broad view, usually scenic.

**Parallax**

With a lens-shutter camera, parallax is the difference between what the viewfinder sees and what the camera records especially at a close distance. This is caused by the separation between the viewfinder and the picture-taking lens. There is no parallax with single-lens-reflex cameras because when you look through the viewfinder, you are viewing the subject through the picture-taking lens.

**PC Cords**

The purpose of sync cords is to allow the camera to control the flash so the flash fires at the correct time. Other common names for electrical cords to connect flash to camera are PC cords, sync cord, or synch cord. One type of electrical connector on camera bodies is called a PC socket, from which the name PC cord is derived. Sync and synch are both intended to be abbreviations of the word synchronization.

**PC Terminal/PC Socket**

Some older flash units may not have a hot shoe on the flash unit and would need cable connections to fire in a timely manner. It is a threaded collar surrounding the center electrical part of the socket. Some flash cords have a connector that makes electrical contact with the center part of the socket and is held securely in place by a threaded ring that screws into the outer part of the socket on the camera body. It is an alternative way to sync the electronic flash on the camera. Some of the modern autofocus cameras have omitted this feature on the body. It can

also be used to activate another flash unit via sync cord in a multiple flash setup. PC sockets and common PC cords fit together by pushing the connector on the cord into the socket on the camera. It remains connected only because of the friction.

**Perforations**

Perforations are regularly and accurately spaced holes punched throughout the length of film for still cameras. Basically, the perforation functions as a guide for precision registration of film and also provides mechanical movement from frame to frame.

**Perspective**

Perspective is the rendition of apparent space in a flat photograph, i.e. how far the foreground and background appear to be separated from each other. It is determined by only one factor: the camera-to-subject distance. If objects appear in their normal size relations, the perspective is considered "normal"; if the foreground object are much larger than the ones in the background, the perspective is considered "exaggerated", and when there is little difference in size between the foreground and background, it is said the perspective looks "compressed".

**Perspective Control (PC)**

Perspective control is also known as tilt or shift lenses. These are lenses that allow for correction of linear distortion resulting from high or low camera angle. Most are with a gear or sliding mechanism and most require manual metering.

**Phase Alternation Line (PAL)**

PAL is a system for minimizing hue error in color transmission used in the EU.

**Photo File Index Print**

Photo file index print is a basic system feature that makes ordering reprints and enlargements easy. The small print shows a positive "thumbnail" sized version of every picture on an Advanced Photo System film roll. It accompanies all prints and negatives returned in the sealed film cassette by the photofinisher. Each thumbnail picture is numbered on the index print to match the negative frames inside the cassette.

**Photofinisher Service Certification**

Photofinishers Service Certification is a program developed by the System Developing Companies to give special recognition to photofinishers and retailers who provide the minimum Advanced Photo System feature set. It's identifying logo signals to consumers which photofinishers and retailers provide all of the mandatory benefits of the system.

**Photolamp (3400K)**

Photolamp refers to a photographic lamp giving more light than a normal lamp of the same wattage. This is at the expense of the filament life. They are often referred to by the trade mark Photo Hood and are used with type A color films.

**Photomicrography**

Photomicrography is the process of taking photographs of minute objects using a camera and a microscope and not to be confused with "microphotography". It is the process of making minute photographs of large objects.

**Picture Angle**

Picture angle is the angle of coverage of a lens usually measured across the diagonal of the picture frame and varies with focal length. The longer the focal length is the narrower the picture angle will be; the shorter the focal length is the wider the picture angle will be. Telephoto ratio is derived by dividing the distance from the front vertex of a lens to the front vertex by the focal length. The smaller the telephoto ration, the smaller the total length of the lens.

**Pincushion Distortion**

Pincushion distortion is when straight lines are bowed in toward the middle to resemble the sides of a pincushion and is present in small amounts in some telephoto and telephoto-zoom lenses. It is the opposite of barrel distortion.

**Plane**

Plane refers to a level surface and is used in photography chiefly in respect to focal plane. It refers to am imagery level surface perpendicular to the lens axis in which the lens is intended to form an image. When the camera is loaded, the focal plane is occupied by the film surface.

**Polarized Light**

Polarized light are light waves vibrating in one plane only as opposed to the multi-directional vibrations of normal rays. The natural effects produced by some reflecting surfaces such as glass, water, polished wood, etc. can be simulated by placing a special screen in front of the light source. The transmission of polarized light is restrained by using a screen at an angle to the plane of polarization.

**Polarized Screen (Filter)**

A polarized screen is a filter that transmits light traveling in one plane while absorbing light traveling in other planes. When placed on a camera lens or on light sources, it can eliminate

undesirable reflection from a subject such as water, glass, or other shiny surfaces. This filter also darkens blue sky.

**Positive**

A positive is the opposite of a negative and refers to an image with the same tonal relationships as those in the original scenes, i.e. – a finished print or slide.

**Preset Iris**

A preset iris is a diaphragm with two setting rings or one ring that can be moved to two positions. One is click-stopped, but does not affect the iris and the other moves freely and alters the aperture. The required aperture is preset on the first ring, and the iris closed down with the second just before exposure.

**Print**

A print is a positive picture usually on paper and usually produced from a negative.

**Printing Frame**

A printing frame is a device used for contact printing that holds a negative against the photographic paper. The paper is exposed by light from an external light source.

**Printing-in (see Burning-in)**

**Processing**

Processing is developing, fixing, and washing exposed photographic film or paper to produce either a negative image or a positive image.

**Program Exposure**

Program exposure is an exposure mode on an automatic or autofocus camera that automatically sets both the aperture and the shutter speed for proper exposure.

**Programmed Auto**

Programmed auto is when the camera sets both the shutter speed and the aperture for correct exposure.

**Push Processing**

Push processing refers to increasing the development time of a film to increase its effective speed (raising the ISO number for the initial exposure) for a low-light situation. It could be referred to as “forced development”.

**R3000**

R3000 is a chemical process for making prints from slides.

**RA4**

RA4 is a process for producing slides from negatives.

**RGB**

RGB refers to the red, green and blue, the black is a simulated color. CMYK is the four primary colors.

**Rangefinder**

A rangefinder is an instrument for measuring distances from a given point, usually based on slightly separated views of the scene, provided by mirrors or prisms. It can be built into non-reflex cameras. Single-lens reflexes may have prismatic rangefinders built into their focusing screens.

**Rear-Curtain Sync**

Rear-curtain sync is when the flash fires an instant before the second (rear) curtain of the focal plane shutter begins to move. When slow shutter speeds are used, this feature can create a blur effect from the ambient light, i.e. flowing-light patterns following a moving subject with subject movement frozen at the end of the light flow. (See "Front-Curtain Sync"). Most mid to top range camera models have this feature.

**Reciprocity**

Most films are designed to be exposed within a certain range of exposure times – usually between 1/15 second and 1/1000 second. When exposure time falls outside this range, becoming significantly longer or shorter, a film's characteristics may change. Loss of effective film speed, contrast changes, and (with color films) color shifts are the three common results. These changes are called reciprocity effect. Generally, exposure beyond one second needs to compensate for this film characteristic.

**Reflector**

A reflector is any device used to reflect light onto a subject to improve balance of exposure (contrast). Another way to achieve this is to use fill in flash.

**Refractive Index**

Refractive index refers to describe the effect of a lens in causing light rays to bend. This is an important aspect in lens design.

**Relative Aperture**

Relative aperture is a numerical expression of effective aperture and is also known as f-number. It is obtained by dividing the focal length by the diameter of effective aperture.

**Release-Priority**

For autofocus, release-priority means the shutter can be released anytime even when the subject is not in focus. This helps you avoid missed opportunities when you are not concerned with absolute focusing precision.

**Reproduction Ratio**

Reproduction ratio is a term used in macrophotography to indicate the magnification of a subject. Specifically, this means the size of the image recorded on film divided by the actual size of the subject. For example, if the image on the film is the same size as the subject, the reproduction ratio is written as 1:1 of 1X.

**Resolution**

Resolution is the ability of a lens to discern small detail. In photography, the image resolution in the final photograph depends on the resolving power of the sensitive emulsion and on the lens. The two are not related, but the effective resolution is a function of both. For reasonably accurate photographic measurements of lens resolution, the sensitive material must have a much greater resolving power than the lens.

**Reticulation**

Reticulation is cracking or distorting of the emulsion during processing. This is usually caused by wide temperature or chemical-activity differences between the solutions.

**Retouching**

Retouching is altering a print or negative after development by the use of dyes or pencils to alter tones of highlights, shadows, and other details or the removal of blemishes.

**Retrofocus Design**

In a retrofocus design, which applies to wide-angle lenses, the back focus is designed to be longer than the lens' focal length to allow clearance for the movement of the reflex-mirror. No mirror lock up or separate viewing accessory attachment is required with the retrofocus design. It consists of front diverging apd rear converging lens groups, as opposed to the telephoto design, and is therefore also called the inverted telephoto design.

**Safelight**

A safelight is an enclosed darkroom lamp fitted with a filter to screen out light rays to which film and paper are sensitive. The light source consists of a housing, lamp and screen of a color that will not affect the photographic material in use. Safelight screens are available in various colors and sizes for specific applications.

**Saturation**

Saturation is an attribute of perceived color, or the percentage of hue in a color. Saturated colors are called vivid, strong or deep. Colors that are not saturated are called dull, weak, or washed out.

**Scale**

Scale refers to a focusing method consisting of a set of marks to indicate distances at which a lens is focused and may be engraved around the lens barrel, on the focusing control or on the camera body.

**Screen**

The screen is the surface upon which the lens projects an image for viewfinding and focusing purposes. In SLR cameras, it is almost always a Fresnel screen with a fine-ground surface and often incorporates a microprism or split-image rangefinder.

**SDC System Developing Companies**

Five companies, who are photo industry leaders, jointly developed the standards for the Advanced Photo System.

**Selective Focus**

Selective focus is choosing a lens opening that produces a shallow depth of field. Usually this is used to isolate a subject by causing most other elements in the scene to be blurred.

**Selenium**

Selenium is a light-sensitive substance which, when used in a barrier-layer construction, generates electrical current when exposed to light. It is used in exposure meters and needs no external power supply.

**Self-Timer**

A self-timer is a mechanism delaying the opening of the shutter for some seconds after the release has been operated. It is also known as delayed action.

**Semi-Automatic Iris**

A semi-automatic iris is a diaphragm mechanism which closes down the taking aperture when the shutter is released, but must be manually reopened to full aperture.

**Sensitivity**

Sensitivity is an expression of the nature of a photographic emulsion's response to light. It can be concerned with degree of sensitivity as expressed by film speed or response to light of various colors (spectral sensitivity).

**Sharpness**

Sharpness is a term used to describe the ability of a lens to render fine detail clearly. It is dependent on the contrast and resolution of a lens and varies with the f/stop. In general, a lens is sharpest at the middle apertures. It can technically be explained as clarity of the photographic image in terms of focus and contrast. It is largely subjective but can be measured to some extent by assessing adjacency effects, i.e. the abruptness of the change in density between adjoining areas of different tone value.

**Shutter**

A shutter is a blade, curtain, plate or some other movable cover in a camera that controls the time during which light reaches the film.

**Shutter Priority**

Shutter priority is an exposure mode on an automatic or autofocus camera that lets you select the desired shutter speed; the camera sets the aperture for proper exposure. If you change the shutter speed, or the light level changes, the camera adjusts the aperture automatically.

**Sidelighting**

Sidelighting is light striking the subject from the side relative to the position of the camera. It produces shadows and highlight to create modeling on the subject.

**Silicon**

Silicon is a light-sensitive substance which generates a minute current when exposed to light.

**Silicon Photo Diode (SPD)**

SPD are battery powered light sensitive cells, the most common light reading cells for cameras external metering devices.

**Single-Lens-Reflex (SLR) Camera**

A SLR camera allows you to see through the camera's lens as you look in the camera's viewfinder. Other camera functions, such as light metering and flash control, also operate through the camera's lens.

**Slave Unit**

Accessory flash "slave" units are available to fire multiple flash units without multiple electrical connections to the camera. These units sense the light output of the first flash, which is mounted in the camera hot shoe, or cord-connected to the camera. When the light output is sensed, the slave unit triggers a second flash unit that is connected only to the slave. Additional slaves and flash units can be used if needed.

**Slide**

A slide is a photographic transparency (positive) mounted for projection. It represents a first generation production of an image. Most agencies and photo editor require slides rather than prints.

**Slow Sync**

Slow sync is a flash technique for using the flash at a slow shutter speed. Flash shooting in dim light or a night at a fast shutter speed often results in a flash-illuminated subject against a dark background. Using a slower shutter speed with the flash brings out the background details in the picture. Use of a slow shutter speed with rear-curtain sync is particularly effective for illustrating the movement of a stream of stream of light and can be very creative if put to good use.

**Soft Focus**

Soft focus is produced by use of a special lens that creates soft outlines. The use of filters to produce soft focus is more popular than the use of a lens as filters are more economical and flexible.

**Soft Lighting**

Soft lighting is low or moderate in contrast, such as on an overcast day.

**Solid-State Floppy Disk (SSFDC)**

SSFDC is an alternative source of storage medium used by Apple's Quick-Take digital camera as opposed to ATA standard Flash Memory card.

**Split-image**

Split-image is a form of rangefinder image that is bisected so that the two halve of the image are aligned only when the correct object distance is set on the instrument or, in the case of a coupled rangefinder, when the lens is correctly focused. SLR cameras may have a prismatic split-image system in their viewing screen. It works on the same principle as a microprism, and is restricted to apertures of f5.6 or greater.

**Stabilizer**

A stabilizer is used as an alternative to a fixer when permanence is not required. It is used in automatic processing machines and can now provide prints that will not deteriorate noticeably over many months if kept away from strong light.

**Stain**

Stains are discolored areas on the film or paper, usually caused by contaminated developing solutions or by insufficient fixing, washing, or agitation.

**Stop Bath**

Stop bath is an acid rinse, usually a weak solution of acetic acid, used as a second step when developing black-and-white film or paper in the darkroom. It stops development and makes the hypo (fixing bath) last longer.

**Stopping Down**

Stopping down is changing the lens aperture to a smaller opening; for example, changing from f/8 to f/11. Some lenses, like PC lens or attachment with a non-dedicated bellow or macro photography, stop down exposure metering is required for correct reading.

**Stop-Down Metering**

Stop-down metering is TTL metering in which the light is measured at the picture-taking aperture. As the meter just measures the passing though the lens, there is no need for any lens-camera interconnections.

**Studio Lamps (3200K)**

Studio lamps are tungsten or tungsten halogen lamps designed for studio use. They have a longer life than photo lamps, but a lower specific output and color temperature. They are used with type B film.

**Subjective Quality Factor (SQF)**

SQF is essentially a lens rating system.

**Supplementary Lens**

A supplementary lens is generally a simple positive (converging) lens used in front of the camera lens to enable it to focus at close range. The effect is to provide a lens of shorter focal length without altering the lens-film separation, thus giving the extra extension required for close focusing.

**Super Video Home System (SVHS)**

SVHS is clearer than the conventional VHS because it separates chrominance and luminance transmission.

**Sync Cords**

The purpose of sync cords is to allow the camera to control the flash so the flash fires at the correct time. Other common names for electrical cords to connect flash to camera are PC cord, sync cord and synch cord. One type of electrical connector on camera bodies is called a PC socket thus the name PC cord. Sync and Synch are both intended to be abbreviations of the word synchronization.

**Sync Delay**

All electronic flash units require X synch, but flashbulbs require a time delay between firing the flash and opening the camera shutter. The optimum delay varies among flashbulb types, but you will get much of the flashbulb light through the shutter and onto the film even if delay is not exactly correct. Firing delay for flashbulbs is indicated by code letters: "F" – fast, "M" – medium, "MF" – medium fast and "S" – slow.

**Sync Socket**

Sync Socket is often referred to as "PC terminal" or "PC Socket". Most older manual focus SLR camera bodies have the standard PC sockets which have a threaded collar surrounding the center electrical part of the socket. Some older flash units may not have a hot shoe on the flash unit and would need a cable connection to fire the flash (sync) in a timely manner with the shutter. Some flash cords have a connector that makes electrical contact with the center part of the socket and is held securely in place by a threaded ring which screws into the outer part of the socket on the camera body. It is also used for multiple flash setup (non-TTL or manual) where the secondary flash can be used via a sync cord to fire at the same time.

**Sync Speed**

Sync speed is the exposure time, with a focal-plane shutter, measured from the instant the first curtain is released to begin its travel across the frame, until the instant the second curtain is released to begin its travel across the frame. When the first curtain reaches the end of its travel, the film frame is uncovered as far as the first curtain is concerned, so it closes the electrical

contacts for X sync and fires the flash instantly. Sync speed is the shutter speed at which the entire film frame is exposed when the flash is fired in flash shooting. Most modern cameras with a vertical travel shutter curtain have faster flash sync speed like 1/250 second or slower. Some top camera models are changeable to 1/300 second with custom setting.

**Synchronization**

Synchronization refers to the concerted action of the shutter's opening and closing of electrical contacts to fire a flashbulb or electronic flash at the correct moment to make the most efficient use of light output. FP or M-synchronization is constructed to fire flashbulbs just before the shutter is fully open allowing a build-up time. X-synchronization fires the electronic flash exactly at the moment the shutter is fully open.

**T (setting)**

T is the setting that holds the camera shuttle open until the shuttle dial is turned or release is pressed a second time. This setting differs from "B" (Bulb) in that it is usually a stand alone setting and never drains the battery power. It is ideal for really long time exposures.

**T-Grain Technology**

T-Grain Technology is the trademark for patented Kodak film emulsion technology used in all Kodak Advanced Photo System films. It is uniquely shaped grains that align better than conventional silver crystals thus absorbing and transmitting light more effectively to produce sharper images.

**Telephotos Lens**

A telephoto lens makes a subject appear larger on film than does a normal lens at the same camera-to-subject distance. It has a longer focal length and narrower field of view than a normal lens and has a shallower depth of field than a wide angle lens. It can do isolation of subject and have a longer reach without going near to the subject. This can be helpful in sports or wildlife photography. It is also referred to as a "long" lens.

**Thin Negative**

A thin negative is underexposed or underdeveloped (or both). A thin negative appears less dense than a normal negative.

**Through-The-Lens (TTL)**

TTL is a type of exposure meter built into the camera body and reading through the camera lens. It may measure either at full aperture or at picture taking aperture.

**Through-The-Lens Auto Flash**

The camera's light sensor measures flash illumination, as reflected by the subject on the film and shuts off the flash where measurement indicates a correct exposure. Because the sensor that controls the flash receives light through the lens, TTL auto flash can be used for bounce flash photography, fill flash photography and multiple flash photography, etc. An additional advantage of TTL auto flash is that it enables you to use a wide range of aperture settings while ensuring correct exposure.

**Through-The-Lens Focusing**

Through-the-lens focusing is viewing a scene to be photographed through the same lens that admits light to the film. Through-the-lens focusing while focusing and composing a picture eliminates parallax, as does a single-lens-reflex (SLR) camera.

**Through-The-Lens Metering**

A through-the-lens meter is built into the camera and determines exposure for the scene by reading light that passes through the lens during picture-taking. Most SLR cameras have built-in meters which measure light after it has passed through the lens. This is a feature that allows exposure readings to be taken from the actual image about to be recorded on film whatever the lens angle of view and regardless of whether a filter is used or not.

**Time Exposure**

Time exposure is a comparatively long exposure made in seconds or minutes.

**Tint**

Tint refers to shade of white in a finished print. It is controlled by the color or the paper, varying from white to buff.

**Titanium/Titan Camera Body**

Titanium is one of the world's strongest, yet lightest, materials. Its specific gravity is approximately half that of brass, yet its hardness is almost the same as steel. Its corrosion resistance is greater than stainless steel. Titanium is a very difficult material to process.

**Tone**

Tone is the degree of lightness or darkness in any given area of a print and is also referred to as value. Cold tones (bluish) and warm tons (reddish) refer to the color of the image in both black-and-white and color photographs.

**Toning**

Toning is intensifying or changing the tone of a photographic print after processing. Solutions called toners are used to produce various shades of color.

**Transparency**

A transparency is a positive photographic image on film viewed or projected by transmitted light shining through the film.

**Transparent Magnetic Layer**

A transparent magnetic layer is an information storage layer built into Advanced Photo System film that enables enhanced information exchange capabilities, improving print quality by capturing lighting and scene information and other picture-taking data. It is the basis for future information exchange features.

**Tilt and Shift Lens (T/S)**

T/S is Cannon's version of the PC (perspective control) lens.

**Tripod**

A tripod is a three-legged supporting stand used to hold the camera steady. It is especially useful when using slow shutter speeds and/or telephoto lenses. Another type is the monopod, a single leg tripod.

**Tungsten Light**

Tungsten light is light from regular room lamps and ceiling fixtures that are not fluorescent. Images that are produced under this light source can be extremely warm if not excessively warm. Tungsten light needs some color balance filtration or flash to neutralize the excessive warmth.

**Twin Lens Reflex (TLR)**

TLR cameras have separate viewing and actual exposure lenses.

**Type A Film**

Type A film is color film balanced for use with photolamps (3400K).

**Type B Film**

Type B film is color film balanced for use with studio lamps (3200K).

**Ultra Violet Ray (UV)**

The UV is beyond the visible spectrum, that is, it is the invisible electromagnetic radiation of sunlight. UV lenses are very expensive and are only offered be Nikon.

**Ultra-Wide Angel Lens**

An ultra-wide angle lens usually has an angle view greater than 90 degrees. For 35 mm cameras ultra-wide angel lens usually refers to lenses of shorter focal length than 24 mm.

**Underexposure**

Underexposure is a condition in which too little light reaches the film producing a thin negative, a dark slide, or a muddy-looking print.

**Unipod**

A unipod is a one-legged support used to hold a camera steady and is also referred to as a monopod.

**Variable-Contrast Paper**

Variable-contrast paper is photographic paper that provides different grades of contrast when exposed through special filters.

**Variable Focus Lens**

A variable focus lens can have the focal length continuously varied between set limits. The lens must be refocused with each change in focal length.

**Viewfinder**

A viewfinder is a device or system indicating the field of view encompassed by the camera lens. The term is sometimes used as a description of the type of camera that does not use reflex or "straight-through" viewing systems and therefore has to have a separate viewfinder.

**Vignetting**

Vignetting is the underexposure of image corners produced deliberately by shading, or unintentionally by inappropriate equipment (unsuitable lens hood, badly designed lens, etc.). Vignetting is a common fault of wide-angle lenses due to reflection cut-off of some of the very oblique rays. It can be caused in some long-focus lenses by the length of the lens barrel.

**Watt Per Second (WS)**

WS is the measurement of electrical energy in the flash.x.

**Wide-Angle Lens**

A wide-angle lens has a shorter focal length and a wider field of view (includes more subject area) than a normal lens. It is a lens whose focal length is shorter than the diagonal of the film frame; in 35 mm photography, lenses shorter than 50 mm. It is also referred to as a "short" lens.

**X (setting)**

Electronic flash units fire virtually instantaneously and reach full brightness immediately; therefore no time delay is required. It is also referred to as the X sync. It is a real time setting that causes flash to burst in synchronizes or instantaneously as the shuttle opens. For older manual cameras, the X sync speed usually refers to the maximum speed that the camera can have its shuttle curtain open to synchronize with the flash. In fact, if there is a time delay, the electronic flash may be all over before the shutter gets open. To fire electronic flash with a focal-plane shutter, the switch in the camera is closed at the instant the first curtain of the focal-plane shutter reaches fully open. It is also referred to as X synchronization.

**X Sync Terminal**

Electronic flash units are available which mount on the hot shoe and are triggered by the electrical contact in the shoe. Other types a use sync cord which connects to the sync terminal on the camera.

**Zoom Lens**

With a zoom lens you can adjust the focal length over a wide range of focal lengths. It substitutes for lenses of many focal lengths. The focal length of a zoom lens is continuously variable over a certain range without a change of focus. The focal length is changed by operating a separate zoom or combination focusing/zoom ring. It is a difficult lens to design and manufacture but is good for the photographer on a budget or who likes to travel light.

Reference: http://www.kodak.com/global/en/consumer/glossary/glossary
http://www.camerapedia.org/wiki/Glossary
http://www.mir.com.my/rb/photography/glossary/terms_a.htm
http://www.openphotographicsociety.org/frameglossary.htm