Filter
Optically effective element with selective → transmission. Only a part of the radiation falling on a surface is transmitted, so that either coloured light is produced or invisible portions of radiation (→ ultraviolet, → infrared) are eliminated. Filter effects can be achieved by means of selective → absorption or → interference. Interference filters allow an especially clear division of the light that is transmitted and that which is eliminated by the filters

Flood
Usual term used for wide-beam → reflectors or → reflector lamps

Fluorescence
Fluorescence is a process by which substances are excited by means of radiation and made to produce light. The wavelength of the light emitted is always greater than the wavelength of the radiation used to excite the substances. Fluorescence is used in technical applications for → luminous substances that convert → ultraviolet radiation into visible light

Fluorescent lamp
Low-pressure → discharge lamp filled with mercury vapour. The ultraviolet radiation produced during the mercury discharge process is converted into visible light by the luminous substances on the inner wall of the discharge tube. By using different luminous substances it is possible to produce a variety of luminous colours and different colour rendering qualities. As a rule, fluorescent lamps have heated electrodes and can therefore be ignited at comparatively low voltages. Fluorescent lamps require an ignitor and a ballast, → EB

Focal glow
Focal glow refers to accent lighting. Light is used deliberately to convey information by visually accentuating significant areas and allowing insignificant areas to remain in the background

Fovea
→ Eye

Fresnel lens
Stepped lens, where the effect of a considerably thicker lens is achieved by a flat arrangement of lens segments. Optical disturbance caused by the edges of the prisms is usually corrected by producing a grained finish on the rear side of the lens. Fresnel lenses are primarily used in stage projectors and spotlights with adjustable → beam spreads

Functional requirements (Lam: activity needs)
The functional requirements a lighting concept is expected to meet are dictated by the visual tasks which are to be performed; the aim is to create optimum perceptual conditions for all activities to be performed in a specific area

Gas light
An early form of lighting using a bare gas flame to produce light

General lighting
Uniform lighting of an entire space without taking specific visual tasks into account. → Ambient lighting

General service lamp
→ Incandescent lamp

Gestalt (form) perception
Theory of perception that presumes that perceived structures are regarded as a gestalt, i.e. as complete forms, and not synthesized as individual elements. Each gestalt is classified according to a specific law of gestalt and separated from its environment

Glare
Generic term describing the depreciation of → visual performance or the disturbance felt by perceivers through excessive → luminance levels or → luminance contrasts in a visual environment. A distinction is made between disability glare, which does not depend on luminance contrast, and contrast-related relative glare. Furthermore, a distinction is made between disability glare (physiological glare), by which there is an objective depreciation of visual performance, and discomfort glare, which involves a subjective disturbance factor arising from the incongruity of luminance and information content of the area perceived. In all cases glare can be caused by the light source itself (direct glare) or through the reflection of the light source (reflected glare)

Gobo
Term used in stage lighting to describe a mask or template, which can be projected onto the set using a projector

Goniophotometer
→ Photometer

Halogen lamp
Compact incandescent lamp with additional halides in the gas compound, which prevents deposits of the evaporated filament material forming on the outer envelope. In contrast to general service lamps, halogen lamps have increased luminous efficacy and a longer service life

High-pressure discharge lamps
→ Discharge lamps

High-pressure mercury lamp
High-pressure → discharge lamp containing mercury vapour. In contrast to the low-pressure discharge process, which produces almost exclusively → ultraviolet radiation, at high pressure mercury vapour produces visible light with a low red content. Luminous substances can be added to complement the red content and improve → colour rendering. High-pressure mercury lamps require → ballasts, but no → ignitors

High-pressure sodium lamp
High-pressure discharge lamp containing sodium vapour. As aggressive sodium vapour can destroy glass at high pressures, the internal discharge tube is made of alumina ceramic and surrounded by an additional outer envelope. In contrast to → low-pressure sodium lamps colour rendition is considerably improved, but at the expense of luminous efficacy. The luminous colour is in the warm white range. High-pressure sodium lamps require → ignitors and → ballasts

High-voltage fluorescent tubes
→ Fluorescent lamps similar to low-pressure → discharge lamps, which work with unheated electrodes and accordingly require high voltages. The discharge tubes can be extremely long and have a variety of forms. They are used primarily for luminous advertising and for theatrical effect. They are filled with neon or argon gas and contain luminous substances, which can produce a large number of luminous colours. High-voltage fluorescent tubes require an → ignitor and a → ballast

Ignition aid
Equipment to facilitate ignition, e.g. in the case of → fluorescent lamps with unheated electrodes, usually an auxiliary electrode or an external ignitor system

Ignitor
→ Control gear which promotes the ignition of → discharge lamps by producing high-voltage peaks. Leakage transformers, ignition transformers, ignition pulsers and electronic ignitors can be used as ignitors

Illuminance
Represented by the symbol E (lx) Illuminance is defined as the ratio of the amount of luminous flux falling on a surface to the area of the surface

Incandescent gas light
Form of lighting whereby an incandescent mantle coated with rare earths, originally using other solid bodies (e.g. limestone, limelight) is excited to thermolumine-scence using a gas flame. The luminous efficacy is far greater and the light produced of a shorter wavelength than is the case with pure → gas light

Incandescent lamp
→ Thermal radiator, where light is produced by the heating of a wire filament (usually tungsten). The filament is contained in an outer envelope made of glass and filled with a special gas (nitrogen or inert gas) to prevent the filament from oxidizing and to slow down the vaporisation of the filament material. There are various types of incandescent lamps available: the main group comprises general purpose lamps with drop-shaped, clear or frosted outer envelopes, the reflector lamp with a variety of internal mirrors, and the PAR lamp made of pressed glass with an integral parabolic reflector

Inductive circuits
Circuit in which a non-compensated discharge lamp can be operated on an inductive → ballast (CCB, → LLB). In this case the power factor of the installation is below unity

Infrared radiation
Invisible long-wave radiation (thermal radiation, wavelength >780 nm). Infrared radiation is produced by all light sources, especially thermal radiators, where it is the major component of the emitted radiation. At high illuminance levels infrared radiation can lead to inacceptable thermal loads and damage to materials

Interference
Physical phenomenon which occurs when asynchronous waves are superimposed, which results in the selective attenuation of wavelength ranges. Interference is used in → filters and → reflectors for selective → transmission or → reflection

Interference filters
→ Filters

Inverse square law
Law that describes the → illuminance as the function of the distance from the light source. The illuminance decreases with the square of the distance

Involute reflector
→ Reflector

Isoluminance diagram
Diagram to illustrate luminance distribution, in which lines representing values of luminance are indicated on a reference plane

Isolux diagram
Diagram to illustrate illuminance distribution, in which lines representing values of illuminance are indicated on a reference plane