**Light sources**

* Light characteristics
  + Intensity
  + Direction
  + Polarity
  + Coherence
  + Wavelength
  + Light travels in form of waves
  + The amount and type of lighting directly affects our appetite, mood and daily life
* Division of light sources
  + Natural light sources
    - Include sun, stars, fire and electricity in storms
    - There are animals which can create their own light like fireflies, jellyfish
  + Artificial light resources
    - Are created by humans
    - Flashlights, table lamps, neon signs and televisions
    - Most of the light which are man-made need an energy source such as electricity or batteries to produce light
    - We divide into:
      * Electrical light source
        + They convert electrical current into visible light
      * Spot lights
        + Allow room lighting to suit individual needs
        + Bathroom, kitchen
      * Surface lights
        + Street lights
        + Sodium, LED or mercury vapor lights
        + Energy efficient, Eco-friendly
        + Rather expensive
    - Incandescent light bulbs
      * 19th century technology
      * Inventor – T.A. Edison
      * Generate light by heating the metal filament
      * Have been forbidden in EU since 2009
      * Advantages
        + Low price
        + Simple
        + Cheap to manufacture
      * Disadvantages
        + They often overheat
        + 90% of energy is wasted
        + Very low efficiency
        + Short lifetime (1000 hours)
        + High electricity consumption
      * Halogen lamps
        + Incandescent lamps that run in higher temperature
        + The gas inside the bulb is halogen-based (iodine, bromine, xenone)
        + They have been forbidden in EU since 2018
    - Compact fluorescent lamp (CFL)
      * Energy-saving lamps
      * They have 2 electrodes in a glass tube
      * Use electric current to stimulate mercury vapor inside the lamp
      * Advantages
        + Various colours
        + Use less energy
        + Last 8-15 times longer (10 000 hours)
      * Disadvantages
        + Relatively expensive
        + Not eco-friendly – contain toxic mercury
        + Emit ultraviolet (UV) radiation
    - Discharge lamp (výbojka)
      * HID lamps – high intensity discharge lamps
      * Vapor lamps for lighting large areas, headlights of cars and aircrafts
    - LED lamps/stripes
      * Electric current passes through a semi-conductor
      * Have tiny crystals of gallium instead of gas and one or more light-emitting diodes
      * Have 50 times longer life (50 000 hours)
      * Low power consumption
      * Are available in various colours