

DNA analysis and quantification have become a common process in these laboratories daily as a starting point of the different procedures being performed in the molecular biology laboratory. Spectrophotometers are extremely precise, accurate, and sophisticated devices, which can be used as a benchtop or models in labs or portable for fieldwork. It is also a routine technique in procedures for translational research such as Next-Generation Sequencing (NGS), Polymerase Chain Reaction (PCR) or Real-Time PCR (quantitative PCR; qPCR), cloning or transfection which initiates the subsequent workflow. Often the DNA has to be analyzed in trace amounts of samples, e.g. in medically relevant applications like the detection of cell-free fetal DNA in the maternal circulation or of circulating tumor cells. Spectrophotometry is a form of electromagnetic spectroscopy, pertaining to the quantitative measurement of the transmission or reflection properties of a material as a function of wavelength. DNA spectrophotometers are frequently used for ultraviolet, infrared, and visible radiation, however, they can also interrogate many other elements of the electromagnetic spectrum. Additionally, the sample-transmission percentage, the logarithmic range of sample-absorption, and occasionally a percentage of reflectance measurement are important features for some applications. DNA quantification is an important pre-analytical method, which is of great importance for many molecular biological analysis methods and can even determine their success.