

Synthesis of silver nanoparticles in a continuous flow microreactor

Analysis method setup

The methods below describe the analysis methods as used by *FutureChemistry* and act as a starting point or reference when setting up an analysis method on location.

UV-vis method

The microreactor outflow is diluted approximately 10 times and measured on a UV spectrophotometer. The resulting spectrum shows two absorption maxima: one for the Nonidet P-40 surfactant (around 270 nm) and one for the silver nanoparticles (around 400 nm).

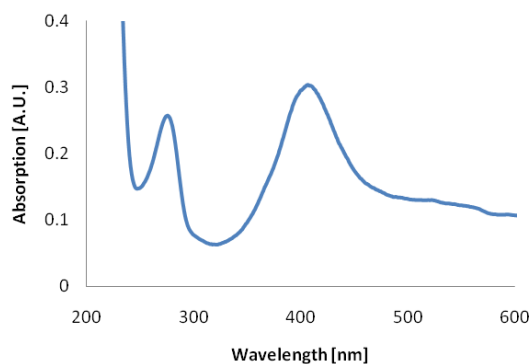


Figure 1: Example UV-vis spectrum.

The relation between the diameter of the silver nanoparticles and the absorption maximum is given by the following relation, in which d is the particle diameter in nm and λ_{max} is the absorption maximum of the nanoparticles in nm :

$$d = -0.005441 \cdot \lambda_{max}^2 + 5.654 \cdot \lambda_{max} - 1367$$

Note: The inverse of this relationship is found by using the quadratic formula (Dutch: *ABC formule*).