Preparation of Gold Nanoparticles (AuNP)

Aim of the Experiment

This experiment serves to create a concentrated ready-to-use solution of AuNPs from stock which is needed for later DNA-conjugation.

Materials

- MTS2 shaker (IKA, Germany)
- Nanophotometer (Implen, Germany)
- Solid Bis(p-sulfonatophenyl)phenylphosphine dihydrate dipotassium salt (BSPP) (Sigma Aldrich, Germany)
- BSPP solution (2.5 mM)
- citrated Gold Nanoparticle (AuNP) suspension (10 nM, diameter: 10 nm)
- NaCl solution (5 M) (Carl Roth, Germany)
- Methanol (Carl Roth, Germany)

Procedure

- Dissolve 20 mg of BSPP in 50 ml AuNP suspension.
- Shake the suspension for 3 days at room temperature at 500 rpm.
- Add NaCl solution to the suspension until the color changes from red to blue.
- Centrifuge the suspension at 1600 rcf for 30 min at room temperature and discard supernatant.
- Dissolve the pellet in 800 µl BSPP solution and add equal volume of methanol.
- Centrifuge the suspension in a table-top centrifuge at 1600 rcf for 30 min.

- Discard supernatant and dissolve in 800 μl BSPP solution.
- Concentration of AuNP is determined at wavelength $\lambda = 518$ nm and extinction coefficient $\varepsilon = 8.5 \cdot 10^{7}$ mol^{-1} cm^{-1}.