

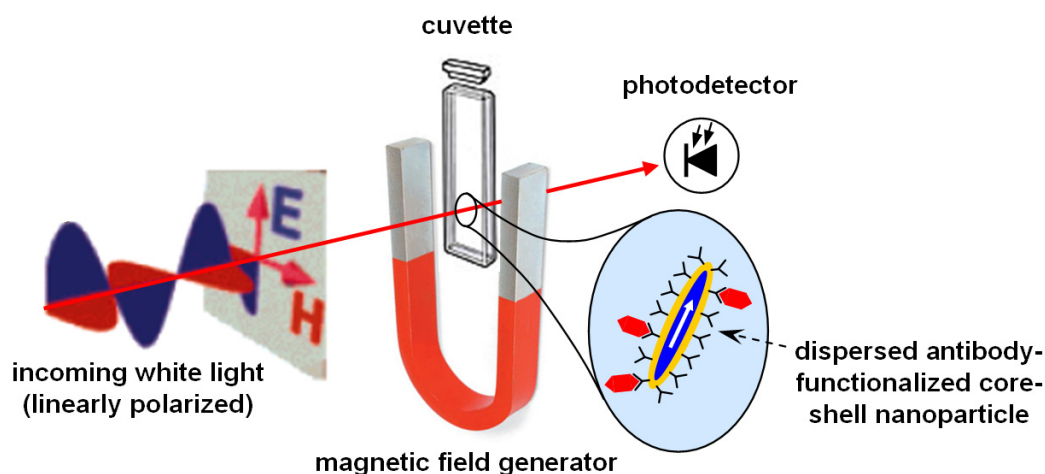
'Lab-on-a-Bead' for immunological diagnosis

Nanoparticle-based optical detection of analytes directly in the sample solution

- Principle: optical detection of particle relaxation in an external magnetic field
- Nanoparticle relaxation time increases with increasing hydrodynamic volume (i.e. on binding analytes)
→ Solution-based biosensor
- Hybrid elongated core-shell nanoparticles well suited for the method
- Measurement scheme: magnetic manipulation & optical detection of nanoparticle orientation
→ see sketch

Expected benefits

- Homogeneous solution-based method
→ faster diffusion & more efficient molecular binding;
no sample preparation & washing steps required
→ **Well-suited point-of-care method**
- Large nanoparticle scattering & extinction cross section
→ Optical detection of nanoparticle concentrations down to ~ 100 nanoparticles per μl
- Detectable analyte loadings down to ~ 10 molecules per nanoparticle
→ Theoretical detection limit in the lower fM-range



Established consortium

Five scientific and one SME partner from four European countries:

- Austria
- Czech Republic
- France
- Germany

Consortium specifically selected to successfully realize the proposed detection method

Targeted FP7-call

- NMP-2009-4.0-3
Development of nanotechnology-based systems for molecular diagnostics and imaging
- Activity: Integration of technologies for industrial applications
- Funding scheme: Large-scale integrating Collaborative Project
- Deadline 1st stage: February 17th 2009

Seeked partnership

Fusion with another consortium for joint submission to the FP7 call NMP-2009-4.0-3

Benefit: Extension of proposal by a potent consortium offering an innovative nanoparticle-based immunological detection method

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