

## **Precisions synthesis of nanocrystals and their use in biomedical applications**

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We report on the precision synthesis of fluorescent and magnetic nanocrystals using a preparative flow reactor. Experimental design is used to determine the crucial parameters and their influence on particle growth and size distribution.

In the second part of the talk, we will present biological applications of nanocrystals. In particular, we will show a comparison of different shell materials in respect of unspecific cell adhesion and uptake and discuss parameters controlling these processes. Nanocrystals, which were equipped with cross-linked block-copolymer ligand shells or encapsulated by emulsion polymerization show extraordinary low unspecific cell interactions. We present various techniques for bio-conjugation with recognition molecules and show examples for specific cell and tissue targeting. In-vitro and in-vivo fluorescence and MRI data will be discussed.