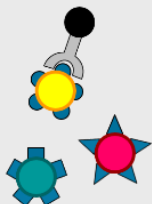


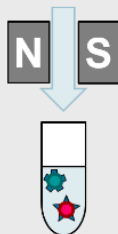
Nanoparticle-based, magnetic cell sorting

Due to the increased use of cell-based therapeutic approaches (e.g. CAR-T cell therapy), the need for automated technologies for the isolation of defined cell populations from blood products is steadily growing. One possibility for targeted cell purification is provided by appropriately functionalized superparamagnetic iron oxide nanoparticles (so-called SPIONs), which bind to the target cells and can be separated from the remaining blood components via a magnetic retention system. For high purification efficiency, however, the SPIONs must exhibit defined properties (good magnetizability, large spec. surface areas etc.), which can be specifically adjusted by selecting the process parameters during production.

Magnetic labeling



Magnetic separation



Elution of labeled cells



Within the scope of the student work, the following tasks are to be processed:

- Variation of process parameters during **synthesis and spray drying of magnetic nanoparticles**
- Two-step **functionalization** of the produced particles to generate a defined surface chemistry
- **Characterization** and optimization of the particle properties
- Depending on the scope of the work, **development of a suitable magnetic retention system** and testing of the purification efficiency (in cooperation with the Institute of Biochemical Engineering)

If you have any questions, don't hesitate to ask me ☺

Remarks:

The temporal scope can be flexibly tailored to **bachelor, student or master theses**. Practical **laboratory experience** as well as previous experience in **biological, chemical and pharmaceutical engineering or biotechnology** are desirable.

Begin: Contact:

By arrangement
M. Sc. Jennifer Pierick
Franz-Liszt-Str. 35a
38106 Braunschweig
Phone: 0531/391-65647
j.pierick@tu-braunschweig.de

