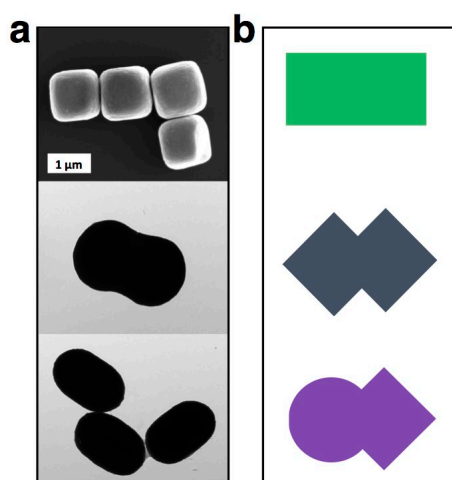


## Magnetic hematite particles with exotic shapes

Bachelor/Master project

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Hematite particles are extremely important in the soft matter world, not only for their magnetic, optical and catalytical properties, but also because of their synthesis versatility as they allow for preparation of well-defined particles with different shapes. Examples include cubic, peanut-like and ellipsoidal particles as shown in Figure 1a below.



**Figure 1 a.** Electron microscope images of differently shaped hematite particles. **b.** Graphical interpretation of the possible novel shapes that will be prepared during the course of this project.

In this project the student will investigate the growth of hematite crystals to form (hybrid) particles with exotic and novel shapes. By adding various salts and different precursor particles in the reaction mixture the student will learn to control the directional growth of hematite crystals into particles with novel and exotic shapes. Example of expected shapes are depicted in Figure 1b.

Depending on the length of the project (Bachelor or Master), the student will also investigate the magnetic properties of the novel colloids by performing optical microscope studies of 2D particle systems and Alternating Gradient Magnetometer (AGM) measurements.

If time allows, the student will be encouraged to perform preliminary assembly experiments of the novel colloids in the presence and in the absence of an external magnetic field.

**For more information, please contact:**

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