

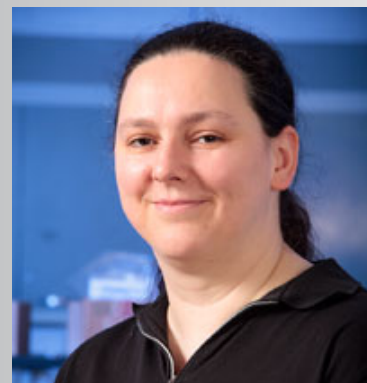
## Magnetic Assembly of Patchy and Janus Particles

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**ABSTRACT:** Anisotropically surface modified particles, so-called patchy particles, have been recognized as important building blocks in the directed assembly of particles into desired target structures. Various methods employing shadow evaporation and templating have been used to create spherical particles with anchor patches of controllable size and position. Subsequently, patchy and Janus particles can be directed to assemble into interesting structures using magnetic or electric fields or can be linked chemically via molecular modification. Here we will report on the preparation of patchy particles using a combination of templates and glancing angle vapor deposition (GLAD) developed in our group. Simple geometrical models are used to predict the patch geometry and relative orientation of the patches. We will discuss the use of patch geometry, material, and position for the field-directed assembly of such patchy particles in magnetic fields and the potential application of these patchy and Janus particles in the assembly of new materials and rheological applications when magnetic fields are combined with electric fields.

**BIOGRAPHY:** Ilona Kretzschmar received her Diploma (1996) and PhD (1999) degrees in Chemistry from the Technical University of Berlin. Her graduate studies with Professor H. Schwarz, enabled her to work on reactions of metal cations with organic molecules in the gas phase employing Fourier-transform ion-cyclotron resonance (FTICR). In addition, she performed Guided-Ion Beam (GIB) mass spectrometry experiments aiding her PhD thesis work in the laboratory of Prof. Peter Armentrout at the University of Utah. From 2000 to 2002, she was a Feodor-Lynen postdoctoral fellow at Harvard, working on hydrocarbon radical-rearrangement reactions on clean and modified metal surfaces. Subsequently, she worked as a research associate in the Department of Electrical Engineering at Yale in the area of molecular electronics. Currently, she holds a professor position in the Chemical Engineering Department at the City College of New York. Her research interests range from particle surface modification via nanomaterials to molecular directed motion and assembly as well as emulsions.



### EVENT DETAILS

**DATE:**

October 23, 2013

**TIME:**

11:00 AM

**LOCATION:**

Morton 103  
Stevens Institute of  
Technology

**ATTENDANCE:**

Public

**Co-Sponsored by the  
CEMS Department**