Prof. Dr. J.Barth Physikdepartment E20

Master project: Foldamers on solid surfaces: tethering, folding and assembly

Nanoscience can arrange minute molecular entities into nanometric patterns in an orderly manner using self-assembly protocols. For practical applications, it is desirable to support such self-assembled structures on surfaces. With this project we wish to expand the capabilities of self-assembled molecular layers by mimicking the ability of biomolecules, such as proteins, to fold into well-defined conformations.

Therefore, we will investigate the on-surface self-assembly of a series of foldamers: synthetic molecular strands that fold into helices. For controlling the surface deposition in the solid/vacuum interface, we will employ a home-developed electrospray controlled ion beam deposition (ES-CIBD). Scanning tunnelling microscopy (STM) under ultra-high vacuum conditions will be used as a convenient tool to provide real-space information about the molecular adsorption, conformation and self-assembly. The conformation and assembly will be controlled by thermal processing and choice of solid support.

For Master's program Physics (Condensed Matter)

For Master's program Physics (Applied and Engineering Physics)

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