RUN. Regensburg Center
for Ultrafast Nanoscopy

physikalisches Kolloquium

Prof. Dr. Latha Venkataraman
Lawrence Gussman Professor of
Applied Physics &
Professor of Chemistry
Columbia University, New York, USA

Physics and Chemistry at the Nanoscale

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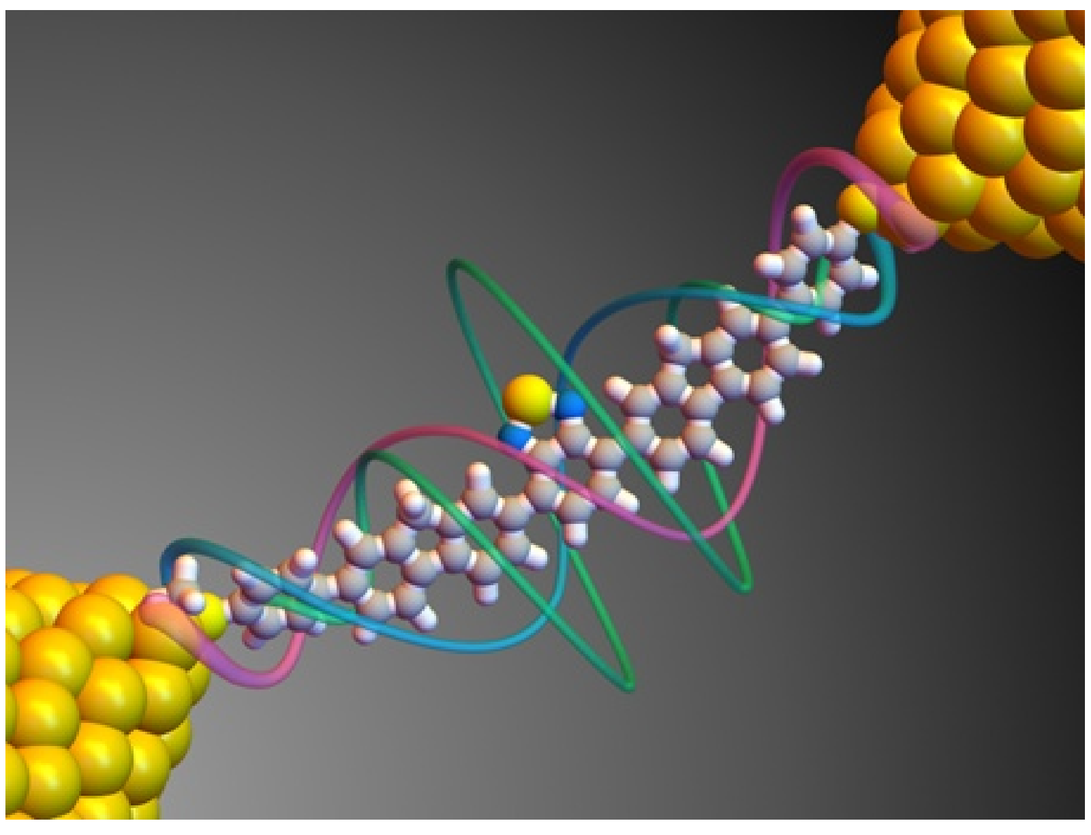
Ort: H34

The past decade has seen tremendous progress in realizing molecular analogues of macroscale electronic components, such as resistors, diodes, switches or transistors, where the molecular circuit property is determined by the chemical structure and physical properties of the metal-molecule-metal junction. This progress has been enabled by the scanning tunneling microscope (STM)-based break-junction technique that my group has pioneered, which facilitates reliable and reproducible measurements of single-molecule devices.

In this talk, I will first describe how we create long and highly conducting molecular wires using one-dimensional analogs of topological insulators. I will next discuss how we use the STM setup to investigate electric-field driven chemistry. Finally, I will present recent work that is aimed at understanding electroluminescence at the nanoscale, both in tunnel junctions and single-molecule junctions. These results highlight the versatility of the STM-break junction instrument in advancing our understanding of physical and chemical phenomena at the nanoscale.



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