## Annual meeting of the Swiss Physical Society 2018



Contribution ID: 232

Type: Talk

## [603] Topological quantum phases in graphene nanoribbons

Thursday 30 August 2018 14:45 (15 minutes)

Topological materials have attracted great interest in solid state physics due to their ability to support robust quantum states at their boundaries. Recently, it has been predicted that localized zero energy modes can be obtained at junctions of topologically dissimilar graphene nanoribbons (GNR). Within a surface-assisted bottomup approach using rationally designed molecular precursors, we have experimentally realized such GNR junctions. By realizing well-defined periodic sequences of these topological electronic modes, one-dimensional electronic bands can be created, which are described by the Su-Schrieffer-Heeger (SSH) Hamiltonian. By controlled manipulation of intra- and inter-cell coupling strength we could create SSH analogs with different topological classes, as evidenced by presence, respectively absence of zero energy end states at the junctions between dissimilar GNR segments.

**Authors:** Dr GRÖNING, Oliver (Empa); Dr WANG, Shiyong (Empa); Mr YAO, Xuelin (MPI Mainz); Dr NARITA, Akimitsu (Max Planck Institute for Polymer Research, 55124 Mainz, Germany); Prof. MÜLLEN, Klaus (Max Planck Institute for Polymer Research, 55124 Mainz, Germany); Dr RUFFIEUX, Pascal (nanotech@surfaces Laboratory, Empa –Dübendorf, Switzerland); Prof. FASEL, Roman (nanotech@surfaces Laboratory, Empa –Dübendorf, Switzerland)

Presenter: Dr RUFFIEUX, Pascal (nanotech@surfaces Laboratory, Empa -Dübendorf, Switzerland)

Session Classification: Advances in Topological Materials

Track Classification: Advances in Topological Materials