TECHNISCHE UNIVERSITÄT CHEMNITZ

PHYSIKALISCHES KOLLOQUIUM

Mittwoch,13.06.2012, um **17:15 Uhr**

Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013

Dr. Heidemarie Schmidt

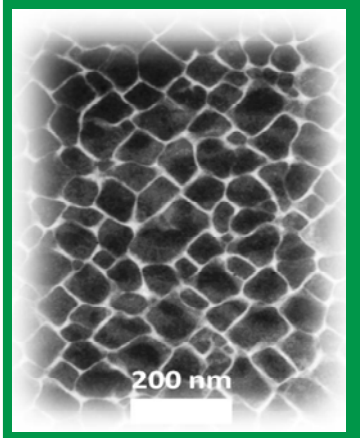
TU Chemnitz, Fak. ET / IT

Multiferroic oxides, ferromagnetic metals, and amorphous nanonets

We observed resistive switching with a large switching ratio up to 4500 and long-term retention in a capacitor-like Au/$BiFeO_3$/Pt structure with a Schottky contact and an Ohmic contact, which can be set and reset to low resistance state and high resistance state by applying external voltages with opposite polarities. We show that the Schottky interface dominates the bipolar resistive switching behavior [1].

Furthermore, we investigated the magneto-optical coupling in ferromagnetic thin films (Fe, $Ni_{20}Fe_{80}$, Co, $Ni_{80}Fe_{20}$, Ni) in the spectral range from 300 to 1100 nm and showed that with additional measurements on the magnetization of the ferromagnetic thin films, one can extract the magnetic field independent magneto-optical coupling constant Q. The converted magneto-optical dielectric tensor agrees well with reported experimental optical conductivity data [2].

Finally, we fabricated a percolating, Mn-rich amorphous Ge:Mn nanonet by Mn ion implantation and pulsed laser annealing (PLA) and observed hysteretic Hall resistance up to 37 K [3]. In the future such nanonets may be used to spin-polarize free charge carriers in semiconductors at room temperature.



TEM image of a ferromagnetic Ge:Mn nanonet in crystalline Ge [3]

[1] Y. Shuai et al., Appl. Phys. Lett., 98, 232901 (2011)
[2] K. Mok et al., Phys. Rev. B 84, 094413 (2011)
[3] D. Bürger et al., Appl. Phys. Lett., 100, 012406 (2012);
Virtual Journal of Nanoscale Science & Technology, 25 (2012**)**

Alle Zuhörer sind ab 17:00 Uhr zum Kaffee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt Prof. Dr. Michael SchreiberTel. 0371/531 33141