chemisch physikalische gesellschaft

Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag von

Prof. Dr. Radek Zbořil

Regional Centre of Advanced Technologies and Materials, Palacky University Olomouc, Czech Republic

Carbon Nanostructures for Biomedical, Environmental, Magnetic and Catalytic Applications

am Dienstag, 9. Jänner 2018, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien, 1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

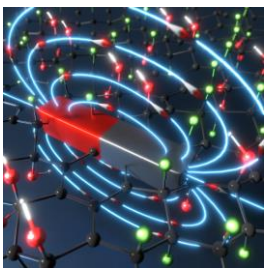
Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

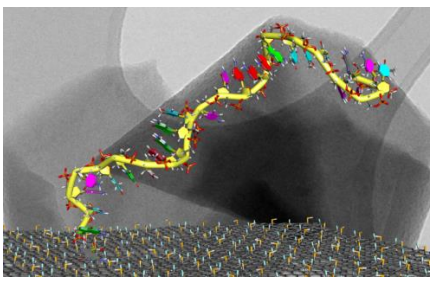
Abstract:

Low-dimensional carbon nanostructures create a quite unique world of diverse allotropes (fullerenes, carbon dots, CNTs, graphene, nanodiamonds etc.), and their derivatives and hybrids can be prepared by approaches of both covalent and non-covalent chemistry [1]. In the present talk, the strategies towards various kinds of photoluminescent (PL) 0D-carbon dots (CDs) and 2D-graphene derivatives will be demonstrated. A quite complex issue of the PL origin in CDs will be discussed and selected applications involving tailored cell labeling, *in vivo* bioimaging or intracellular temperature sensing highlighted [2]. The broad and miscellaneous family of graphene derivatives will be introduced through examples of 2D-materials developed at our institute. Thus, the syntheses, properties and applications of fluorographene, thiographene, cyanographene and graphene acid will be described [3]. Specific attention will be devoted to controllable chemistry of fluorographene towards the first room-temperature non-metallic magnets, and to the development of strong organic magnets via nitrogen and sulfur doping in the graphene lattice [4]. Finally, non-covalent hybrids of graphene derivatives with CNTs, magnetic nanoparticles, MOF species or noble metal core-shell nanosystems will be discussed with respect to their use in e.g. biomedicine, separation and environmental technologies, catalysis, and ink print jet technologies [5].

References:

1) a) Georgakilas V., Zboril R. et al. *Chem. Rev.* 2012, 112, 6156-6214. b) Georgakilas V., Zboril R. et al. *Chem. Rev.* 2015, 115, 4744-4822. c) Georgakilas V., Zboril R. et al. *Chem. Rev.* 2016, 116, 5464-5519.
2) a) Hola K., Zboril R. et al. *Nano Today* 2014, 9, 590-603. b) Bourlinos A., Zboril R. et al. *Chem. Mater.* 2012, 24, 6-8. c) Kalytchuk S., Zboril R. et al. *ACS Nano* 2017, 11, 1432-1442. d) Holá K, Zboril R. *ACS Nano* 2017, DOI: 10.1021/acsnano.7b06399.
3) a) Zboril R. et al. *Small* 2010, 6, 2885-2891. b) Urbanova V.; Zboril R. et al. *Adv. Mater.* 2015, 27, 2305-2310. c) Bakandritsos, A.; Zboril, R. et al. *ACS Nano* 2017, 11, 2982-2991.
4) a) Tucek, J.; Zboril, R. et al. *Nat. Comm.* 2017, 8, 14525. b) Tucek J., Zboril R. et al. *Adv. Mater.* 2016, 28, 5045–5053. c) Blonski, P.; Zboril, R. et al. *J. Am. Chem. Soc.* 2017, 139, 3171-3180.
5) a) Tucek, J.; Zboril R. et al. *Nat. Comm.* 2016, 7, 12879. b) Jayaramulu, K.; Zboril, R.; Fischer, R.A. et al. *Adv. Mater.* 2017, 29, 1605307. c) Jayaramulu, K., Zboril, R.; Fischer, R. A. et al. *Angew. Chem.* 2016, 55, 1178-1182. d) Georgakilas V., Zboril R. et al. *Adv. Funct. Mater*. 2015, 25, 1481-1487.





CHEMISCH-PHYSIKALISCHE GESELLSCHAFT
c/o Universität Wien, Fakultät für Physik, 1090 Wien, Strudlhofgasse 4/Boltzmanngasse 5, Austria
Generalsekretär: Christl Langstadlinger
Tel.: +43-(0)1-4277/51108 - Mobil: 0664-60277 51108 - E-Mail: Christl.Langstadlinger@univie.ac.at
ZVR-Zahl: 513907440 - http://www.cpg.univie.ac.at
Konto: Bank Austria - IBAN: AT22 1100 0086 4440 8000 - BIC: BKAUATWW