

**Annotations of Doctoral Thesis Topics for Degree Course in
“Nanotechnology and Advanced Materials”
for the Academic Years since 2019/2020**

Topic: Modification and utilization of inorganic nanotubes for polymer electronics

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Annotation:

The work will be focused on modification of inorganic nanotubes for utilization in thin film structures for polymer electronics. Nanotubes will be modified by molecular compounds and polymers with the aim to prepare highly anisotropic material with enhanced luminescence and degradation stability. Electronic devices will be prepared from these materials and will be tested by spectroscopic and electric measurement methods available at the TBU.

Requirements:

Knowledge of general and macromolecular chemistry and physics at the university level. Good knowledge of the English language or a potential to the improvement. Basic manual and laboratory work skills. Ability to work independently.

Literature:

1. URBÁNEK, Pavel, KUŘITKA, Ivo. Thickness dependent structural ordering, degradation and metastability in polysilane thin films: A photoluminescence study on representative σ -conjugated polymers. *Journal of Luminescence*, 2015, vol. 168, s. 261-268. ISSN 0022-2313.
2. URBÁNEK, Pavel, KUŘITKA, Ivo, DANIŠ, Stanislav, TOUŠKOVÁ, Jana, TOUŠEK, Jiří. Thickness threshold of structural ordering in thin MEH-PPV films. *Polymer*, 2014, roč. 55, č. 16, s. 4050-4056. ISSN 0032-3861.
3. SCHAUER, František, KUŘITKA, Ivo, NADAZDY, V, GMUCOVA, K, WEIS, M, ROHOVEC, Jan, TOUSEK, Jiří, TOUŠOVÁ, Eva, LANYI, S. Charge Transient, Electrochemical and Impedance Measurements as Tools for Characterization of Nano-Heterostructural Organic/Inorganic Semiconductors. *Nanoscience and Nanotechnology Letters*, 2013, roč. 5, č. 4, s. 439-443. ISSN 1941- 4900.
4. TERJE A. SKOTHEIM, JOHN R. REYNOLDS *Conjugated polymers: theory, synthesis, properties, and characterization*. Boca Raton : CRC Press, 2007.