

F4280 Technologie depozice tenkých vrstev a povrchových úprav Topics for bachelor/master theses

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BRNO | CZECH REPUBLIC



Topics for bachelor/master theses

- ▶ **Atmospheric pressure plasma modification of surfaces for improved adhesion** (plasma treatment of plastics and metals, deposition of organosilicon functional coatings) - collaboration with Surface Treat a.s. <http://www.surface-treat.cz/>, INP Greifswald (plasma jets)
- ▶ **Deposition of NH₂ and COOH plasma polymers**
 - ▶ **immobilization of biomolecules, biosensors (QCM, SPR), tissue engineering** - interdisciplinary topic, collaboration with biologists, biochemists
 - ▶ **understanding of the process of deposition and plasma diagnostics** - collaboration with EMPA St. Gallen (Switzerland), University of Mons (Belgium), University of Bari (Italy), gas dynamics simulations in atmospheric pressure discharge, molecular dynamic simulations (collaboration with Osaka University),
- ▶ **Deposition of TiSiO₂ (ternary oxide) films by atomic layer deposition (ALD)** - optical applications (waveguides), microelectronic applications (dielectric properties), collaboration with University in Nantes (France)
- ▶ **Synthesis of carbon nanotubes for application in sensing and adhesion** - collaboration with Brno University of Technology, Czech Technical University and company FEI (Thermo Scientific) in Brno
- ▶ **Synthesis of graphene and its functionalization**