



ČESKÉ VYSOKÉ UČENÍ TECHNICKÉ V PRAZE

Fakulta Elektrotechnická
Katedra Řídicí Techniky

OPENING PHD POSITIONS

Applications are invited for two PhD positions in the upcoming Applied Physics program at the [Advanced Materials Group \(Department of Control Engineering, Faculty of Electrical Engineering, Czech Technical University in Prague\)](#) to work on the application of computational methods to the study of sliding contact properties of 2D layered materials based on transition metal dichalcogenides (TMDs).

SHORT DESCRIPTION OF THE GROUP:

Advanced Materials Group is a well-established group which pioneers solid lubrication, and, particularly, structural design of self-adaptive coatings. The computational subgroup is growing and it consists of young and motivated researchers working on various but interconnected topics. Computational approaches adopted by the researchers range from *ab initio* electronic structure calculations to massive classical molecular dynamics simulations.

OBJECTIVES:

The project focuses on Computational Materials Science and the main goal is the modeling of the properties of self-lubricant materials with particular attention paid to TMDs. Examples of PhD projects include: i) empirical force field development and assessment for self-lubricant materials; ii) dynamical simulations of systems under sliding conditions; iii) *ab initio* calculations of electronic and dynamical properties of heterostructured TMDs; iv) study of the role of structural dynamics on heat diffusion, energy dissipation and layer exfoliation.

JOB REQUIREMENTS:

Successful candidates must have an MSc in Physics, Chemistry, Materials Science or related disciplines. We are seeking highly motivated individuals with a solid background in physical chemistry/physics. Knowledge of atomistic simulation codes is a plus. Programming experience in widely-used scientific languages (Fortran, C, C++) together with knowledge of shell scripting in UNIX environment is also desirable. Good knowledge of English, both written and oral, is compulsory.

CONTRACT DETAILS:

The salary will be competitive (about 19 000 CZK). The standard period for a PhD course is 4 years.

HOW TO APPLY:

The call is directed at EU applicants (although applications from outstanding candidates outside of the EU will also be considered) and the position will be filled as soon as a proper candidate is found – the starting date is fairly flexible. Applications should consist of a brief description of research interests and relevant experience (e.g. the transcript of studies, thesis *etc*), a CV and, optionally, letters of recommendation from academic referees. Inquiries and applications must be sent to: irvinben@fel.cvut.cz