



GÖTEBORG UNIVERSITY
FACULTY OF SCIENCE

AVAILABLE POSITIONS

2007-11-20 Dnr B311 4530/07-fk2

PhD position/Forskarutbildningsstöd in Chemistry

Topic "*Monte Carlo studies of drug crystal nucleation in aqueous solution*"

Department of Chemistry, Göteborg University, Sweden.

Final date for application: 20 December 2007.

Project description: We are looking for a chemist with an undergraduate degree (B.Sc. or M.Sc.) that would be interested in graduate studies. Knowledge and experiences in physical chemistry, computational chemistry, as well as, surface and colloidal chemistry is a merit. The position will be at the Department of Chemistry, Göteborg University, Sweden and the work is to be carried out as a collaboration with the pharmaceutical company AstraZeneca R&D Mölndal.

Crystallization is an important process in many different applications ranging from protein structure determination (through x-ray crystallography) to the production of chemicals. Within the pharmaceutical area knowledge about crystallization is also important when designing formulations (e.g. tablets) of a poorly soluble drugs in a metastable state (e.g. amorphous) so that both a good stability, as well as, a good absorption in the gastrointestinal tract, can be achieved.

The last couple of years we have worked experimentally to study drug crystal nucleation, i.e. the initial phase of crystallization when the first crystal clusters are formed. In another research area, we have studied how to predict drug solubility in water using molecular simulations. This new project aims to study the formation of crystal clusters in water using computer simulations, and thus, builds on both the above mentioned projects. In short, we will compute the free energy of creating crystal clusters of different sizes and shapes in bulk water of a few selected drug molecules. Furthermore, we will also study the influence on drug crystal nucleation of the presence of a macroscopic crystal interface, containing the same drug in different crystal polymorphs.

Terms of employment: The 4-year PhD program includes 3 years of research and one year of course work (60 ETCS-points). These positions will be extended by one year if 20% teaching assistance and administration is included in the contract. If so, successful applicants will be expected to teach in a Scandinavian language and in English.

Qualifications: Candidates should have read at least three semesters in Chemistry with a degree in Chemistry or equivalent area of science. Candidates should preferably be available in January 2008.

Further information on the announced position may be obtained from Professor Lennart Lindfors, phone +46-31-772 2748, e-mail: lennart.lindfors@astrazeneca.com
Professor Sture Nordholm., phone +46-31-7722831, e-mail: ksjn@chem.gu.se

Application, labelled, ref. no. **B311 4530/07-fk2** including a cover letter, CV, copies of degrees and transcripts of academic record (all attested), a list of at least two references familiar with the applicant's qualifications, and any other relevant documents (e.g. Master or Project Thesis), must be submitted to the following address **no later than 20 December, 2007**.

**Dept. of Chemistry,
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