DET BIOVIDENSKABELIGE FAKULTET
FOR FØDEVARER, VETERINÆRMEDICIN OG NATURRESSOURCER
KØBENHAVNS UNIVERSITET

5 PhD Scholarships in Chemistry & Environmental Sciences

Research Schools of Chemistry & Environment wish to appoint 5 PhD fellows in the following themes by research school, for 3 years starting on September 1st, 2008.

Successful applicants will enrol at the Faculty of LIFE Sciences, University of Copenhagen, under the auspices of the specific research school. The individual research school administers a special study programme for PhD fellows within their field of research.

Graduate School on Metal Ions in Biological Systems (MIBS)

1. Spectroscopic and Kinetic Characterization of Native and Designed Multicopper Oxidases

Department of Natural Sciences in collaboration with Novozymes A/S wishes to appoint a Ph.D. fellow in *Spectroscopic and Kinetic Characterization of Native and Designed Multicopper Oxidases* from 1 September 2008, or as soon as possible thereafter.

Job description
With reference to the project manager, the work of the Ph.D. fellow will consist mainly of duties in connection with research and development within *Bioinorganic chemistry.*

The PhD project is focusing on laccases. A kinetic analysis of provided wild-type and mutant laccases will enable establishment of correlations between the screening assays and enzyme kinetics which is essential for laccase optimization and wild-type screening. The project will also focus on the connection between the redox potential and substrate oxidation/electron transfer. Characterization of the Cu centres is crucial to gain insight into the effect of specific mutations on the basic features of the proteins and it will require redox-potential determination, UV-Vis, stopped-flow, CD & EPR measurements, as well as other methods.

The appointed should have experience within one or more of the following areas:

- Spectroscopy on metal ions in model systems and/or in biological systems
- Structure and function of metal ion containing enzymes and proteins
- Inorganic coordination chemistry

Qualification requirements
In connection with the appointment to the post special importance will be attached to the applicant having the professional and personal qualifications stated below:

- Familiar with writing and speaking English. KU generally encourages employees who do not speak Danish to acquire a working knowledge of the language.
- The Ph.D. fellow is required to have initiative and research potential, to be enterprising and have ability to work as part of a team.

Questions
For further information about the post, please contact professor Morten J. Bjerrum. on tel. (+45) 35 33 24 52

Research School of Environmental Chemistry, Microbiology and Toxicology (RECETO)

2. Modeling helminth and protozoan parasite eggs in low quality water to be used for food production.

Department of Veterinary Pathobiology wishes to appoint a Ph.D. fellow in *Modeling helminth and protozoan parasite eggs in low quality water to be used for food production* from 1 September 2008, or as soon as possible thereafter.

Job description

With reference to the project manager, the work of the Ph.D. fellow will consist mainly of duties in connection with research and development within Environmental Hygiene. The appointee should have qualifications within the following areas:

- Parasitology
- Statistical analysis and modelling
- Environmental microbiology
- Water resources

The overall goal of this project is to establish models of the fate of helminth and protozoan parasite eggs in low quality water to be used for sustainable and safe food production. Fecal contaminated water of different types is increasingly used worldwide, in particular in southern Europe, northern Africa and certain parts of Asia, for irrigation in agriculture and horticulture. This is mainly due to increasing problems with water scarcity, limited availability of clear water, and competition between cities and agriculture on water. However, little is known about the sedimentation, transport and overall fate of parasite eggs in such water. One specific goal is to determine and assess the importance of key hydrologic and environmental factors affecting sedimentation, survival and infectivity of parasite eggs in low quality water, e.g. wastewater. Another is to establish new and further develop existing hydrologic models for the prediction of the fate of parasite eggs in low quality water.

The project will rely on existing methodologies from parasitology and environmental microbiology to determine the occurrence, survival and infectivity of parasites eggs in low quality water. Models developed by the DHI Water, Environment and Health and other relevant models will be used to develop new models for fate of parasite eggs in low quality water.

The Ph.D. student will be enrolled at the Faculty of Life Sciences, University of Copenhagen. The project involves collaboration with research partners at both KU-Life, The DHI Water, Environment and Health and KU-Sund.

Qualification requirements

In connection with the appointment to the post special importance will be attached to the applicant having the professional and personal qualifications stated below:

The position will be appointed to a candidate with experience in one or more of the following areas: parasitology, environmental hygiene, and statistics/modeling. The candidate should be willing to spend stay(s) with foreign research partners. The Ph.D. fellow is also required to have research potential, to be enterprising and to possess good interpersonal skills.

Questions

For further information about the post, please contact Professor Anders Dalsgaard. on tel. (+45) 35 33 2720 or ad@life.ku.dk.

3. The nitrogen cycle and its influence on the European greenhouse gas balance: Plant-atmosphere NH_3/N_2O fluxes and their interactions with plant metabolism and soil nitrogen availability

The Plant and Soil Science Laboratory at Department of Agricultural Sciences wishes to appoint a Ph.D. fellow in *The nitrogen cycle and its influence on the European greenhouse gas balance: Plant-atmosphere NH_3/N_2O fluxes and their interactions with plant metabolism and soil nitrogen availability* from 1 August 2008, or as soon as possible thereafter.

Job description
With reference to the project manager, the work of the Ph.D. fellow will consist mainly of duties in connection with research and development within *Plant Nutrition and Plant-Environment Interactions.* The appointee will conduct Ph.D. thesis research and contribute to work including:

- Construction and operation of advanced systems for measurement of gas fluxes between plants and the atmosphere
- Controlled environment studies of plant-atmosphere gas fluxes in relation to physiological and environmental parameters
- Parameterization of gas fluxes based on biochemical and molecular studies of intra-cellular metabolic processes and transport steps
- The Ph.D. project is linked to the large EU-funded project NitroEurope (www.nitroeurope.eu) and may involve participation in joint field campaigns outside Denmark.

Qualification requirements
In connection with the appointment to the post special importance will be attached to the applicant having the professional and personal qualifications stated below:

- Passed Master´s degree in plant biology or biogeochemistry.
- The Ph.D. fellow is also required to have research potential, technical and analytical skills and to be enterprising.
- Good interpersonal skills. The project will offer excellent possibilities for international collaboration.

Questions
For further information about the post, please contact professor Jan K. Schjoerring on e-mail jks@life.ku.dk, tel. (+45) 35 33 34 95 or (+45) 2371 00 02.

4. Impacts of organic amendments and field-scale heterogeneity on the structure and function of bacterial degrader communities.

Department of Ecology wishes to appoint a Ph.D. fellow in *Impacts of organic amendments and field-scale heterogeneity on the structure and function of bacterial degrader communities* from 1 September 2008, or as soon as possible thereafter.

Job description
With reference to the project manager, the work of the Ph.D. fellow will consist mainly of duties in connection with research and development within *Environmental Microbiology.* The appointee should have qualifications within the following areas:

- Soil Microbiology
- Microbial community analysis
- Statistical analysis
- Environmental chemistry

The overall goal of this project is to understand how relevant agricultural treatments such as sludge/manure application affect abundance and diversity of degrader communities and their pollutant mineralization activities in soil. One specific goal is to determine if field-scale heterogeneity (size of sludge/manure aggregates, different mixing ratios and modes of application) affect structure and function of microbial degrader communities. Another is to determine if toxic antimicrobials (e.g. sulfa drugs) and metals present in

sludge/manure affect microbial biodegradation.

The project will rely on existing methodologies from environmental chemistry and microbiology to determine microbial degradation and composition of microbial communities in soil. Such assays involve radioisotope assays and molecular techniques to study bacterial community diversity based on DNA sequence data from soil. The project will include a new design of improved sampling strategies and data handling to study heterogeneity at different scales in soil.

The Ph.D. student will be enrolled at the Faculty of Life Sciences, University of Copenhagen. The project involves collaboration with research partners at both KU-Life, KU-Farma, DTU and GEUS within the frame of the research Center CREAM (Center for Environmental and Agricultural Microbiology).

Qualification requirements
In connection with the appointment to the post special importance will be attached to the applicant having the professional and personal qualifications stated below:

The position will be appointed to a candidate with experience in environmental microbiology, preferably coupled to knowledge in environmental chemistry. Hands-on experience in determining soil microbial diversity and process activities and an interest for developing new assay formats using different sampling strategies and scales in natural soil will be an advantage. The Ph.D. fellow is also required to have research potential, to be enterprising and to possess good interpersonal skills.

Questions
For further information about the post, please contact professor Jan Sørensen on tel. (+45) 35 33 2626 (jan@life.ku.dk) or associate professor Kristian Brandt on tel. (+45) 3533 2612 (kkb@life.ku.dk).

5. Whole cell biosensors for toxic metals on an optical fibre platform.

Department of Ecology wishes to appoint a Ph.D. fellow in *Whole cell biosensors for toxic metals on an optical fibre platform* from 1 September 2008, or as soon as possible thereafter.

Job description
With reference to the project manager, the work of the Ph.D. fellow will consist mainly of duties in connection with research and development within *Environmental Microbiology.* The appointee should have qualifications within the following areas:

- General Microbiology
- Marker or reporter gene technology
- Miniaturization of biosensing systems
- Environmental chemistry

The overall goal of this project is to develop new sensors for analysis of specific toxic metals in drinking and industrial water. The possibility to determine pollutant bioavailability makes bacterial whole cell biosensors a useful supplement to chemical methods. Other important advantages of the biosensors are rapid performance and low cost. Whole-cell biosensor technology coupled to optical fibres is useful to obtain continuous quantitative analysis. By this approach the biosensor cells are typically immobilized, and their signal is transmitted through the optic fibres to be finally analysed by light sensitive instrumentation.
The project will rely on existing bioluminescent bacterial biosensors for the metals copper and nickel. Major research tasks include optimization of the shelf life and long-term stability of the microbial biosensors and the subsequent development of miniature fibre optic spectrophotometric instrumentation.
The Ph.D. student will be enrolled at the Faculty of Life Sciences, University

of Copenhagen. The project involves collaboration with the Geological Survey of Denmark and Greenland (GEUS) and the Department of Micro and Nanotechnology, the Technical University of Denmark within the frames of the collaborative project SENSOWAQ and the research Center CREAM (Center for Environmental and Agricultural Microbiology).

Qualification requirements
In connection with the appointment to the post special importance will be attached to the applicant having the professional and personal qualifications stated below:

The position will be appointed to a candidate with experience in environmental microbiology, preferably coupled to knowledge in environmental chemistry. Hands-on experience in bacterial marker or reporter gene technology and an interest for developing technical solutions regarding miniature assay formats will be an advantage. The Ph.D. fellow is also required to have research potential, to be enterprising and to possess good interpersonal skills.

Questions
For further information about the post, please contact associate professors Ole Nybroe on tel. (+45) 35 33 2629 (oln@life.ku.dk) or associate professor Kristian Brandt on tel. (+45) 3533 2612 (kkb@life.ku.dk), or professor Jens Aamand on tel. (+45) 3814 2326 (jeaa@geus.dk)

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General terms of employment
Employment and remuneration will be according to the Agreement between the Danish Ministry of Finance and the Danish Confederation of Professional Associations.

The post will be filled according to the Agreement between the Danish Ministry of Finance and the Danish Confederation of Professional Associations. The post is covered by the Protocol on Job Structure.

General questions regarding PhD programmes should be directed to Course Administration c/o Special Advisor Michael Cleve Hansen on phone (+45) 3533 2056 or Head Clerk Lillian Zeuthen Bjørnseth on phone (+45) 3533 2172. Further information on PhD programmes is available at www.uk.life.ku.dk >Present students > PhD programmes > Regulations.

Application
The application should be submitted in 3 copies (sorted); therefore it is not possible to receive the application by e-mail. The application must include a reply e-mail address. Each application must include the following appendices marked with the stated appendix numbers:
Appendix 1: curriculum vitae with documentation of education.
Appendix 2: material required for expert assessment.

In addition to the material submitted by the applicant the Assessment Committee may require further material in its assessment of the applicant. In this case it is the responsibility of the applicant, on request, to send the material to the Committee.

Following processing of the application, any application material sent will be destroyed.

Receipt of the application will not be acknowledged, but the applicant will continuously be kept informed of the progress of the application.

The applicant will be assessed according to the Ministry of Science Technology and Innovation Executive Order no. 92 of 15 February 2008.

The application, marked 625-92 should be sent to **Cluster of Research Schools - Chemistry & Environment, The Faculty of Life Sciences,**

Department of Natural Sciences, **Thorvaldsensvej 40**, **DK-1871 Frederiksberg C**, where it must be received no later than **1 June 2008 at 12.00 noon**. Applications received after the closing date for applications will not be considered.

The Faculty of Life Sciences is one of Europe´s leading university environments in the areas of food, health, plants, biotechnology, natural resources, the environment and related academic areas.

Our research and degree programmes are centred on knowledge and tools that can help secure a brighter future for humans, animals and plants.

Frist: 01-06-2008
Arbejdsgiver: Det Biovidenskabelige Fakultet