

**Lappeenranta University of Technology (LUT)** is an agile, international science university – a pioneer in combining technology and business ever since 1969. Our strategic focus areas are green energy and technology, sustainable value creation and our role as an international hub of Russian relations. LUT's operation is solution-focused and characterized by "open your mind" thinking: crossing boundaries open-mindedly, together.

LUT's **Laboratory of Green Chemistry** is focused on minimizing the hazard and maximizing the efficiency of any chemical choice. One approach is also to find new solutions to prevent and decrease environmental pollution.

The Laboratory is located in **Mikkeli, Finland** and Head of the Laboratory is Prof. Mika **Sillanpää**. In the past, the laboratory has specialized in water analysis and water, wastewater and soil purification techniques in following research areas:

- Adsorption
- Advanced oxidation processes (AOPs)
- Analytics and online monitoring
- Electrochemical technologies and electrokinetics

We now have

**three Doctoral Student positions** available

which are related to mine water treatment and management within the following specific topics.

The overall aim of the project is to convert a liquid waste into a resource by using intelligent techniques and the result shall be mine water winning instead of mine water treatment. Those positions will be under the supervision of Prof. Mika Sillanpää and Dr. habil. Christian **Wolkersdorfer** who is Finnish Distinguished Professor for Mine Water Management and South African Research Chair for Acid Mine Drainage Treatment.

**Position 1:** Valorisation of metal enriched Mine Water by means of **Biotechnology** and improved **Process Control**. Mine Water might be enriched in metals that can be extracted from the water. An optimised process control as well as biotechnology in conjunction with electrochemical methods and advanced oxidation techniques will be able to extract those metals from the mine water and will contribute to the valorisation of this current waste stream. The project shall investigate and use potential biotechnological processes and implement them on a bench and pilot scale in addition with optimising the processes.

**Position 2:** Improving mine water winning with **nanotechnology** and improved **sensor technology**. The project shall investigate potential nanotechnology options in conjunction with other methods and the optimisation of sensors used in mine water treatment. The results shall be implemented on a bench and pilot scale.

**Position 3:** Implementing **Geothermal Processes** and **Hydrodynamic Principles** into Mine Water Winning. Mine water usually has elevated temperatures and elevated metal concentrations. The project shall investigate how geothermal applications can be used within the mine water winning process to heat the mine buildings or to enhance the winning process. Hydrodynamic investigations in the mine shall ensure the optimal flow of the mine water is known and can be used to optimise the winning process.

Applicants should have MSc or MSc (Eng.) degrees either in chemical engineering, environmental sciences, environmental technology, electro-chemistry, biotechnology, chemistry or other related area. The position requires a motivation to complete the doctoral degree within the target time. In addition, the candidate is required to present a postgraduate study plan and a research plan, which are approved at the beginning of the employment relationship (for the person appointed).

The employment relationship is fixed-term. The aim for a Doctoral Student is to complete the doctoral degree in 4 years. The position will be available initially for one year and can be extended for another 3 years provided that the studies have progressed satisfactorily.

The salary will be determined according to the university salary system for teaching and research personnel, job demand levels 1-4 (1767.97 – 2432.20 EUR/month). In addition, the salary will include an individual pay component based on the performance and competence, amounting to a maximum of 46.3 % of the job-specific pay component.

Applicants should start their work latest in August 2014 and working place is located in Laboratory of Green Chemistry, **Mikkeli, Finland**. Part of the work might be conducted in remote areas and it is expected that the applicants will also contribute to research and education related activities of the chair.

For more details please contact Prof. Mika Sillanpää, e-mail: [mika.sillanpaa@lut.fi](mailto:mika.sillanpaa@lut.fi), mobile phone +358 400 205 215 or Prof. Christian Wolkersdorfer, e-mail: [Christian@Wolkersdorfer.info](mailto:Christian@Wolkersdorfer.info).

Call for the positions ends **2014-02-14**. Applications with applicant's CV, study register and a motivation letter should be send to Lappeenranta University of Technology, Records Services, P.O. Box 20, 53851 Lappeenranta, Finland or by email to [asiakirjat@lut.fi](mailto:asiakirjat@lut.fi). Application documents will not be returned to the sender.