

**Institute of Energy Technology – Professorship of Renewable Energy Carriers*****Invitation to a Seminar***

**Date:** Wednesday, October 10, 2012  
**Time:** 16:00-17:00  
**Place:** Maschinenlaboratorium ETH Zürich, ML-J25/26

**Speaker:** **Dr. Jürgen Antrekowitsch**  
Christian Doppler Laboratory for Optimization and Biomass  
Utilization in Heavy Metal Recycling  
University of Leoben, Austria  
[www.cdl-metal-recycling.com](http://www.cdl-metal-recycling.com)

**Title:**  
**Optimization Potentials in the Recycling of Metals from Complex Industrial  
Wastes**

**Abstract** – Due to limited primary metal resources, strict environmental legislations regarding landfilling as well as high metal prices, residues from industry moved in the focus of recycling activities changing their image from wastes to valuable secondary resources. Nevertheless special residues like dusts, sludges and special slags show a very complex character based on the high number of different elements and phases beside an often very complex morphology. Because of this, typical metallurgical principles can hardly be implemented for the recycling of such materials generating a metallurgical challenge for research and process development. During the last centuries processes for the recycling of such residues have been developed. But suffering from different problems the metals recovery rate from these materials is still low, often showing recycling rates below 10 %. Therefore, the main objective in this field of research is the optimization of existing or even the development of new processes with special regard to low energy consuming concepts. Essential subjects, which show the necessity to be improved, allowing a more economical treatment and with this a better utilization of available resources can be summarized as follows:

- Detailed characterization of complex materials combining various analytical methods as well as developing new ones
- Upgrading of recycling products investigating interactions between various compounds during refining
- Implementation of biomass as a CO<sub>2</sub>-neutral reducing agent in pyrometallurgical recycling processes
- Simultaneous recovery of different valuable metals and materials from one residue with the aim to generate a “zero waste” process

The state of the art, the scientific aims and the efforts made in these fields by the above mentioned research group, will be described in the seminar.

**Biosketch** – Jürgen Antrekowitsch studied metallurgy at the University of Leoben. He earned his doctor degree in 2004 in the field of recycling of steel mill dusts with special focus on the halogen removal. Afterwards he was employed as postdoctoral research fellow at the Department of Nonferrous Metallurgy, University of Leoben in the field of recycling of Zn-, Pb- and Fe-containing residues. Since 2010 he holds the *venia docendi* for the field “metallurgy of nonferrous metals” and since January 2011 he is the Head of the Christian Doppler Laboratory for Optimization and Biomass Utilization in Heavy Metal Recycling.

