

Helmholtz – CSC – Fellowships 2010

- Helmholtz Centre:** Helmholtz Zentrum München
- Research Field:** Modern analytical techniques and their application to ambient particulate matter
- Research Project:** **Investigation of ambient particulate matter with comprehensive two-dimensional gas chromatography**
- Position:** PhD Student Sandwich PhD Student Postdoc

Department/Supervising scientist: Institute of Ecological Chemistry / Prof. Ralf Zimmermann, Thomas Gröger

Research Area: Ambient particulate matter is loaded by a huge number of different organic-chemical compounds. The appearance, concentration and relation of these organic compounds are used as indicator for the origin and possible health effects of the particulate matter. However, only a small number of chemical compounds are currently identified as potential tracer compounds and used for e.g. source appointment or epidemiologic studies. Modern higher-dimensional separation techniques like comprehensive two-dimensional gas chromatography coupled to mass spectrometry has been proven as valuable tool for the investigation of such complex mixtures. The resolution power enables the scientist to resolve larger parts of the chemical compounds and make them accessible for statistical and chemometrical investigation. Because of the complexity and nature of particulate matter, which is highly affected by a number of factors, the analytical method and the data analysis has to be fitted to this special problem. The aim of the three year research project is the development of analytical methods and statistical-chemometrical analysis tools based on comprehensive two-dimensional gas chromatography coupled to mass spectrometry for the investigation of particulate matter. The research group has a strong background in the chemical and physical investigation of particulate matter and has also long experience in chromatographic techniques. First research work has already been done on this topic and has been shown, that a consistent further development of new analytical and statistical methods are essential for a better understanding of particulate matter and there impact to human health.

Specific Requirements: Good English, practical experience in analytical chemistry (especially gas chromatography), basic skills in statistics and/or chemometrics, experiences in statistical software and/or a programming language (e.g. MatLab)

- Work Place:** Helmholtz Zentrum München – Campus Neuherberg (practical work), University Rostock (dissertation and examination)
- Earliest Start:** September 2010
- Language Course:** German for foreign employees, German language-training for PhD students and postdocs.
- Further Information:** <http://www.helmholtz-muenchen.de/en/home/index.html>
- Address for application:** Helmholtz Zentrum München, Institut für Ökologische Chemie, Thomas Gröger, Ingolstädter Landstraße 1, 85764 Neuherberg, thomas.groeger@helmholtz-muenchen.de