



Graz University of Technology

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Master Thesis: “Characterization of mineral oil aromatic hydrocarbon fractions using LC pre-separation and GC×GC-ToF-MS”

The Institute of Analytical Chemistry and Food Chemistry is looking for a master student for mineral oil residue characterization in food and food contact material.

Mineral oil is a complex mixture of compounds, which are in terms of food safety and analysis mainly divided into two fractions: mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH). Human exposure to MOSH and MOAH is most relevant through the oral route, e.g. via contaminated food. While the MOSH fraction shows no genotoxic relevance, certain sub-fractions of MOAH may be mutagenic and carcinogenic, according to the opinion of the European Food Safety Authority, 2012. However, since then, it was not possible to weaken or strengthen this statement. A pre-separation of the MOAH into sub-fractions and identification and characterisation of individual substances or substance classes is needed to allow for a comprehensive hazard and risk assessment of MOAH found in food.

Therefore, aim of this master thesis is, to use normal-phase liquid chromatography to separate the MOAH from a crude oil into sub-fractions according to their ring numbers. Afterwards, this subfractions shall on the one hand be characterised by using GC×GC-ToF-MS, on the other hand their genotoxicity shall be determined by using the AMES test. In this way the knowledge gaps concerning the MOAH hazards shall be closed.

This work provides financial support for the student for the duration of six months according to the FWF salaries for student assistants (<https://www.fwf.ac.at/en/research-funding/personnel-costs>)

If you are interested, please contact Prof. Erich Leitner by email under Erich.leitner@tugraz.at