

## **FAST 2019**

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### **Comprehensive LC×GC characterization of mineral oils using vacuum ultraviolet detection**

The quantification and characterization of mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH) has been a challenge for scientists for many years, due to the complex composition of mineral oils (MO). Mineral oils are widely applied in consumer products, such as food, packaging and cosmetics, causing them to contaminate both humans as well as the environment. Due to the harmful effects of mineral oils, it is important to develop methods for both the quantification and characterization of these compounds in consumer products. In this research, a novel comprehensive LC×GC-VUV method for the characterization of purified mineral oils was developed. The first dimension consisted of LC using a silver-loaded silica column, leading to not only distinguishing MOSH from MOAH, but also to separate MOAH based on the number of aromatic rings. Using GC-VUV as a second dimension, it was possible to distinguish different types of aromatics, such as differently substituted monoaromatics and condensed diaromatics from uncondensed diaromatics. The possibility of using spectral filters at specific wavelengths and the low absorption in the vacuum ultraviolet region, makes the VUV-detector highly selective. Therefore, the use of this new method leads to a better understanding about the chemical composition of mineral oils. For future research, this innovating method could be applied for the analysis of the mineral oil content in consumer products.