

## Open PhD Position: Predicting Jet Fuel Properties from Comprehensive Two-Dimensional Gas Chromatography (GC×GC/MS)

In the frame of an **FFG-project** in collaboration with the OMV Downstream GmbH, we offer a funded PhD position (30 h/week) for a duration of three years. The project aims at the **sustainable production of kerosene** by using hydrocarbons produced from CO<sub>2</sub>, water vapour and sustainably produced electrical energy in a Fischer-Tropsch process. The wax product resulting from the Fischer-Tropsch process will be fed into the kerosene production feed, thus contributing to its sustainable production.

In order to produce a kerosene of desired physico-chemical properties, the operation conditions of the Fischer-Tropsch process must be precisely controlled and understood. It will be the task of the PhD candidate to develop methods for the comprehensive characterisation (by comprehensive two-dimensional gas chromatography coupled with mass spectrometry, GC×GC/MS) of the process streams in order to understand how they influence final product quality.

The detailed compositional information of the feed and of the final product will be used to model the relevant properties for use as aviation fuel. A chemometric model is to be established that predicts – from the detailed composition information – the physico-chemical parameters such as boiling point, melting point, density, viscosity, pour point, ignition point, etc.

Understanding the relation between composition of the feed and the resulting material properties will allow to control the process in the refinery in a such way that a maximum yield of the desired product can be obtained.

**The ideal candidate** should hold a Master degree in Chemistry of Chemical Engineering or a related subject, and have a sound background in analytical chemistry. Experience in the use of chromatography and mass spectrometry equipment are highly desirable. Programming skills (R / RStudio or Python) are an important asset. He/she should be highly motivated, flexible used to work efficiently and independently while being a communicative person and a team-player. Excellent command of English language is required, German is beneficial, but not a must.

**The workplace** is at the Getreidemarkt campus of the TU Wien. Located right in the centre of the city. TU Wien with its close to 4000 scientific staff and more than 25000 students is Austria's largest Research & Educational institution in the field of science and technology. Its motto is "technology for people" which is enforced in its social and societal engagement and many of its extracurricular and non-research activities.

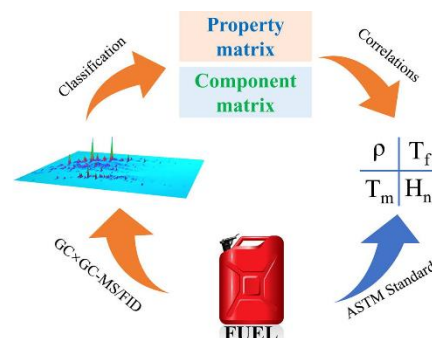


Figure 1: Interrelation between Fuel composition, detailed analysis (by GCxGC/MS), correlation of chemical entities and physico-chemical properties and validation according to predictions according to STM standard.

**Application Deadline:** March 15, 2022. Later applications will be considered until the position is filled.

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