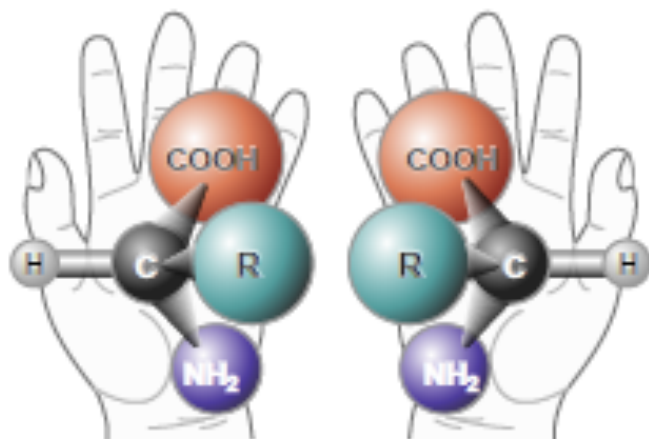


Enantioselective Raman Spectroscopy

Master thesis at the
Institute of Technical Biocatalysis
Process Analytical Technologies Group



Introduction



Chirality: exemplary scheme of the mirror symmetry of two enantiomers, Philos. Trans. R. Soc. B: Biol. Sci., 371(1710):20150403

Chirality is present in everyday life. For example, the fragrances of mint and caraway are molecules which are enantiomers. Many active pharmaceutical ingredients (APIs) are chiral and only one enantiomer of the API is active.

Online analytical methods are becoming more and more important in the context of digitalization and Industry 4.0. Yet, all established online analytical technologies cannot differentiate between enantiomers, and enantioselective measurements have to be performed with time-consuming offline methods. Recently, enantioselective measurements with modified Raman spectrometers have been introduced in literature, and the prospects for application as process analytical method are very promising. This highly innovative technique will be employed & enhanced in this master thesis in cooperation with a partner from industry. The cooperation partner will modify a standard Raman spectrometer to allow enantioselective analysis. In our institute, enantioselective Raman spectroscopy of different industrially relevant analytes will be performed, and the feasibility as online analytical technology for industrial applications will be evaluated.

Beginning: August 2018

Content of the Thesis

During this master thesis you will perform

- Method optimization and validation of reference analytics
- Measurement and analysis of enantioselective Raman spectra
- Reaction monitoring
- Presentation of results to industry partner
- Journal publication of the results with support of the supervisor (optional)

We offer

Innovative analytical technique, cooperation with industry partner, interdisciplinary & intercultural team.

We are looking for

General knowledge of laboratory work and data analysis (MS Office). Interest in instrumental analytics and optical spectroscopy, especially vibrational spectroscopy. Commitment, team player, capable to work independently.

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