FAKULTÄT FÜR CHEMIE

universität wien

Einladung zum Vortrag von

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„Chiral chemistry and chiroptical spectroscopy in the solid state"

Chirality is expressed throughout nature, whether microscopic or macroscopic, and whether animate or inanimate. Solid state provides rich and novel chiral chemistry as molecular interactions are much stronger in the solid phase as compared with those in solution. For example, we have achieved a facile optical resolution by supramolecular crystal formation.[1] We have found that photoreactions of 2-(*o*-substituted-arylthio)-3-methyl-2-cyclohexene-1-ones in the solid state proceed via different reaction pathways from those in solution, under the influence of strong interactions of neighbouring molecule.[2] Co-grinding of different crystals results in the formation of adduct crystals or crystals of new compounds, which are often different from crystals/compounds obtained by conventional methods in solution. We believe this is because solid-state processes partially retain memory of starting crystal structures.[3]

To understand solid-state chirality, it is necessary to measure CD (circular dichroism) in that phase. We have developed UCSs (Universal Chiroptical Spectrophotometers)[4] and MC (Multichannel)-CD spectrophotometer which overcome severe artifact signals intrinsic to solid-state samples. Instrumentation and some results of crystals of inorganic[5] and organic compounds[6] as well as films of peptides responsible for neurodegenerative diseases[7] will be presented.

In parallel, we have been investigating chirality in biological domain. Interesting results on the mechanism of snail coiling which is determined by a single gene locus[8] may be presented if time allows.

Mittwoch, 18. November 2015, 11:15 Uhr
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