PROBING THE CONFORMATIONAL LANDSCAPE OF POLYETHER BUILDING BLOCKS IN SUPERSONIC JETS

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Polyethylene oxides (Polyethylene glycoles) and their phenoxy-capped analogs represent a prominent class of important polymers that are highly used as precursor molecules in supramolecular reactions. After a detailed study on the simplest representative (1,2-dimethoxyethane) [1], we present results on oligoethylene oxides with increasing chain lengths obtained by spontaneous Raman scattering in a supersonic jet.

Through variation of stagnation pressure, carrier gas, nozzle distance and temperature we gain information on the conformational landscape as well as the mutual interconversion of low energy conformers. The obtained results are compared to state-of-the-art quantum chemical calculations.

Additionally, we present UV as well as IR-UV and UV-UV double resonance studies on 1-methoxy-2-phenoxyethane in a supersonic jet. These complementary techniques allow for conformationally selective electronic and vibrational spectra in a closely related conformational landscape.

[1] S. Bocklitz, M. A. Suhm, Constraining the Conformational Landscape of a Polyether Building Block by Raman Jet Spectroscopy, *Z. Phys. Chem.* **2015**, *229*, 1625-1648.