

HIGH-RESOLUTION INFRARED SPECTROSCOPY OF IMIDAZOLE CLUSTERS IN HELIUM DROPLETS USING QUANTUM CASCADE LASERS

DEVENDRA MANI, CIHAD CAN, NITISH PAL, GERHARD SCHWAAB, MARTINA HAVENITH,
Physikalische Chemie II, Ruhr University Bochum, Bochum, Germany.

Imidazole ring is a part of many biologically important molecules and drugs. Imidazole monomer, dimer and its complexes with water have earlier been studied using infrared spectroscopy in helium droplets^{1,2} and molecular beams³. These studies were focussed on the N-H and O-H stretch regions, covering the spectral region of 3200-3800 cm⁻¹.

We have extended the studies on imidazole clusters into the ring vibration region. The imidazole clusters were isolated in helium droplets and were probed using a combination of infrared spectroscopy and mass spectrometry. The spectra in the region of 1000-1100 cm⁻¹ and 1300-1460 cm⁻¹ were recorded using quantum cascade lasers. Some of the observed bands could be assigned to imidazole monomer and higher order imidazole clusters, using pickup curve analysis and ab initio calculations. Work is still in progress. The results will be discussed in detail in the talk.

References: **1)** M.Y. Choi and R.E. Miller, *J. Phys. Chem. A*, **110**, 9344 (2006). **2)** M.Y. Choi and R.E. Miller, *Chem. Phys. Lett.*, **477**, 276 (2009). **3)** J. Zischang, J. J. Lee and M. Suhm, *J. Chem. Phys.*, **135**, 061102 (2011).

Note: This work was supported by the Cluster of Excellence RESOLV (Ruhr-Universität EXC1069) funded by the Deutsche Forschungsgemeinschaft.