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Cold ion spectroscopy of gas-phase biological molecules for structural determination

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Spectroscopy of biomolecules and their complexes, isolated in the gas phase from interactions with solvent, is a quickly developing field that provides benchmarks for calculations of intrinsic three-dimensional structures of these large species. We employ double-resonance photo-fragmentation approach to measure UV and conformer-selective IR spectra of protonated biomolecules, cryogenically cooled in the gas phase.{Boyarkin, 2006 #61}{Stearns, 2007 #261}{Nagornova, 2011 #27}{Nagornova, 2012 #26} Cooling ions to ~10 K greatly suppresses thermal congestion and allowed us to measure vibrationally resolved UV and conformer-specific IR spectra of protonated biomolecules as large as decapeptides and their water complexes.{Nagornova, 2011 #27}{Nagornova, 2012 #26} we currently evaluate limitations of our experimental approach by pushing it towards spectroscopy of protonated proteins.

Biography

Oleg V. Boyarkine is a senior research scientist at EPFL, head of group. He got his Ph.D. in 1991 in Moscow, Soviet Academy of Science, and then worked for 2 years as postdoc at the University of Rochester, USA. Since 1994 he works at the Swiss Institute of Technology in Lausanne, Switzerland. He published 62 reviewed scientific papers, total number of citations is 1336, h-index is 20.

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