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In situ sum-frequency generation spectroscopy of ethylene-glycol and poly-N-isopropylacrylamide films VOLKER KURZ, PATRICK KOELSCH, University Heidelberg — Ethylene-glycol(EG)-based self-assembled monolayers (SAMs) are often used as a model systems for thin liquid films. Temperature series in heavy water were measured using a unique sample cell developed for in situ sum-frequency generation (SFG) spectroscopy experiments. Results obtained from model EG-SAMs with different lengths and terminating groups in various ionic solutions showed temperature-dependent changes in the molecular order. Films of poly-N-isopropylacrylamide(pNIPAM) were also characterized by in situ SFG spectroscopy in the CH, OH, OD and amide spectral regions under different polarization combinations. These systems have many applications as thermo-responsive polymers due to their ability to change solubility in water at the biologically relevant temperature of 32 ° C. This so-called lower critical solution temperature (LCST) phase transition was characterized in depth, allowing for the identification of the molecular groups involved in this process.

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