

HELIUM NANODROPLETS AND LIQUID HOT NAGMA: WHAT STUDENTS CAN LEARN ABOUT ENTROPY FROM INFRARED SPECTROSCOPY AND A MODEL DIPEPTIDE

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In undergraduate thermodynamics, entropy is one of the most misunderstood topics; in part, this is due to its abstract nature, but confusion also stems from using a definition based on “order” or lack thereof. Students can understand this definition easily, especially if it is related to the state of a messy room over the course of time. When asked about the entropy of a molecular system, however, students have difficulty translating their definition based on “order” to a new context.

An activity was created and implemented in an undergraduate physical chemistry course to guide students through alternate definitions of entropy. The activity combines thermodynamic calculations, entropy, and current spectroscopic research⁴ together with concepts covered in class to give students a complete picture of this topic. In this talk, the activity and its implementation will be discussed along with preliminary outcomes.

⁴Leavitt, C. M.; Moore, K. B.; Raston, P. L.; Agarwal, J.; Moody, G. H.; Shirley, C. C.; Schaefer, H. F.; Douberly, G. E. Liquid Hot NAGMA Cooled to 0.4 K: Benchmark Thermochemistry of a Gas-Phase Peptide. *J. Phys. Chem. A* 2014, 118 (41), 9692–9700.