

Abstract Submitted  
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**Hole-filling spectroscopy of the *trans*-formanilide-H<sub>2</sub>O and tryptamine-H<sub>2</sub>O complexes: Solvent shuttling and solvent loss<sup>1</sup>** TIMOTHY ZWIER, JASPER CLARKSON, Dept. of Chemistry, Purdue University — Studies of molecular clusters formed and cooled in a supersonic expansion offer unique opportunities to study novel types of dynamical processes under well-defined conditions. This talk will highlight recent studies in our laboratory at Purdue involving water-containing complexes with *trans*-formanilide (TFA) and tryptamine (TRA). In TFA-H<sub>2</sub>O, stimulated emission pumping is used to initiate a unique type of reaction in which a single water molecule is shuttled between remote hydrogen-bonding sites on the same solute molecule. The energy barrier to isomerization is measured for shuttling the molecule in either direction. In TRA-H<sub>2</sub>O and TRA(ND<sub>2</sub>)-D<sub>2</sub>O, infrared excitation is used to dissociate the water molecule from a flexible molecule with well-defined starting geometry. Isomer-specific product quantum yields of the TRA monomer product will be reported as a function of the XH or XD oscillator excited. The interplay between water loss and conformational isomerization of the flexible TRA molecule will be discussed.

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