PHOTODISSOCIATION OF NH_3 ISOLATED IN SOLID PARAHYDROGEN

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The photodissociation of ammonia (NH_3) in the gas-phase and on surfaces has been extensively studied both experimentally and theoretically. This led us to investigate the ultra-violet photodissociation of NH_3 isolated in solid parahydrogen. A series of experiments were performed to explore the condensed phase photochemistry in order to develop a mechanistic understanding of this reaction. Initial studies utilized the 193 nm output of an ArF laser to photodissociate the NH_3 molecule and high resolution FTIR spectroscopy to follow the extent of reaction. Infrared spectroscopic results will be presented that indicate the imidogen (NH) radical is generated and trapped in the photochemical process. Further studies utilizing different photodissociation wavelengths and deuterated ammonia will also be presented and discussed.