Reactions of Laser Ablated Be Atoms with H_2O: Infrared Spectra of HOBeOH and H_2O-BeO in Solid Argon.

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Products formed by reacting laser ablated Be atoms with H_2O included beryllium oxides seen in earlier Be + O_2 experiments[b] as well as novel molecules mentioned above. Similar products arise from the formation of BeO in both systems. Once formed BeO may either react with H_2O to form HOBeOH or form the H_2O-BeO complex. Products were identified by several modes in excellent agreement with DFT calculations and provide interesting comparisons to beryllium oxides such as OBeO and Ar-BeO.[c] HOBeOH is calculated to have an HOOH dihedral angle of 86° comparable to H_2O_2. The molecules also has a linear OBeO subunit whose antisymmetric stretch is observed about 81 cm^{-1} to the blue of OBeO. Spectra for both species will be presented along with a brief comparison to the oxygen system.

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[c]Thompson, C. A.; Andrews, L. J. Am. Chem. Soc. 116, 423 (1994).