Abstract Submitted
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Chemistry in Solid Parahydrogen at Low Temperature[1] DAVID T. ANDERSON, SHARON C. KETTWICH, LEIF O. PAULSON, University of Wyoming — Cryogenic solid molecular hydrogen provides a weakly perturbing crystal environment to study the low temperature (2-5 K) chemistry of embedded reactive species. Solid hydrogen is considered a quantum solid since the zero-point translational motion of the light hydrogen molecules dominates the physical properties of the crystal. Photodissociation of molecules embedded in the solid hydrogen provide a means of generating molecular species *in situ* that normally would react with H_2 at room temperature, but at the low temperatures at which hydrogen is a solid these species can be trapped and studied spectroscopically. Recent studies of the photodissociation of Cl_2 in solid parahydrogen (hydrogen crystals enriched in the para-H_2 nuclear spin isomer) reveal a means to study the infrared-induced Cl + H_2(v=1) $\rightarrow$ HCl + H reaction at temperatures below 2 K. Current efforts are aimed at studying the analogous O + H_2(v=1) $\rightarrow$ OH + H reaction and the most recent results and analysis will be presented at the meeting.

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David T. Anderson
University of Wyoming

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