Abstract Submitted
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Long-wave infrared absorption spectrum of U:CaF_2[1] JUSTIN CLEARY, ROBERT PEALE, University of Central Florida — High-resolution transmission spectroscopy at liquid-helium sample temperatures was performed on a single crystal of CaF_2 doped to 1 atomic percent with uranium. Uranium concentration was verified by Rutherford backscattering spectroscopy, which revealed no significant concentrations of other heavy impurity ions. A previously unreported group of sharp lines was found in the spectral region of 900 - 3500 cm^{-1}. Temperature dependence reveals the presence of a low-lying level 10 cm^{-1} above the ground level. Ultraviolet laser irradiation of the sample at 248 nm and 355 nm wavelengths and annealing at 100 C induced changes in absorption-line strengths and revealed independent behavior of at least 5 groups of lines. These results indicate the presence of at least five different crystal-field environments for the uranium center.

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