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Recent Progress in Actinide Spectroscopy in Silicate Matrices.*

Z. Assefa

Oak Ridge National Laboratory, CASD, POBox 2008, MS 6375, Oak Ridge, TN 37831**.**

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Spectroscopic investigations of structural, bonding, and fundamental excited-state interactions of f-species in silicate matrices have been investigated. One focus involved energy up-conversion emissions in actinide systems. The first example of up-conversion emission from Am^{3+} in silicate host was observed recently, where the intensity of the emission showed a non-linear dependence with the laser power. This up-conversion appears to proceed via at least three excitation steps and involves energy transfer between neighboring Am ions. Studies of multi-doped f-species have also been investigated to probe the presence of excited state interaction in the systems. In the Am/Tb system exclusive excitation of Am(III) provided sensitized emission from Tb(III), indicating energy-transfer between the two species. These and other recent spectroscopic studies of actinides will be discussed in this presentation.
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