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Tunable Electronic Energy Transfer in Layered Inorganic Solids Codoped with Tb^{3+} and Eu^{3+} CHRISTIE LAROCHELLE, Franklin & Marshall College — $Ln[M(CN)_2]_3$ systems (Ln=trivalent rare earth, M=Au,Ag) have a layered structure consisting of alternating layers of the $M(CN)_2^-$ ions and Ln^{3+} ions. Our past studies of tunable energy transfer have focused on transfer from $Au(CN)_2^-$ or $Ag(CN)_2^-$ donor ions to a variety of rare earth ions, including Tb^{3+} and Eu^{3+}. Most recently, we have characterized systems with mixed metal donors, such as $La[Ag_{.5}Au_{.5}(CN)_2]_3$, $La[Ag_{.75}Au_{.25}(CN)_2]_3$, and $La[Ag_{.9}Au_{.1}(CN)_2]_3$. We have found that these systems exhibit "tunability" of emission energy due to the variation of the donor emission associated with varying the Ag/Au ratio. Tunability also occurs with changing temperature and excitation wavelength. Also, the steady-state luminescence spectra of these compounds reveals that they are strongly luminescent at room temperature, in contrast to the corresponding $La[Ag(CN)_2]_3$ and $La[Au(CN)_2]_3$ pure metal systems. Results will be presented from a new series of samples incorporating both Tb^{3+} and Eu^{3+} as acceptors. The tunability of the donor's emission wavelength allows for changes in the spectral overlap with each of the two donors. Preliminary results show variation in the rare earth (acceptor) emission with changing temperature and excitation wavelength, indicating the possibility of tuning the energy transfer off of one acceptor and onto the other.

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