

Abstract Submitted
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Trivalent chromium probes in mixed dicyanoargentate-dicyanoaurate single crystals C.L. LAROCHELLE, J.K. KREBS, Franklin & Marshall College — Single crystals of the form $R[M(CN)_2]_3$ (R =trivalent ion, such as a rare earth; M =Ag, Au, or both) have a layered structure consisting of alternating layers of $M(CN)_2^-$ ions and R^{3+} ions. Recent work on this type of crystal has focused on energy transfer from the metal dicyanide donor to the rare earth acceptors, specifically Tb^{3+} , Eu^{3+} , Sm^{3+} , and Ce^{3+} . Crystals of this type are particularly interesting because the luminescence energies are tunable, changing with changes in the temperature as well as Ag/Au ratio. Doping these single crystals with chromium can provide an opportunity to study the crystal field strength at the ion site because the energy levels in chromium are very sensitive to the ion's environment. We present steady-state excitation and emission results, along with lifetime measurements for a series of crystals of the type $Cr_{0.1}La_{0.9}[Ag_xAu_{1-x}(CN)_2]_3$, with $x=1, 0.5, 0.75, 0.9$. These measurements indicate that the chromium emission is of an unusually low energy in these crystals.

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