

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

A mid-IR phosphor using thulium-praseodymium-doped potassium lead chloride¹ JOSEPH GANEM, Loyola University Maryland, ALTHEA BLUIETT, Elizabeth City State University, NICHOLAS CONDON, SHAWN O'CONNOR, STEVEN BOWMAN, U. S. Naval Research Laboratory — Efficient energy transfer at room temperature from Tm^{3+} to Pr^{3+} has been demonstrated in co-doped KPb_2Cl_5 . The energy transfer processes result in the conversion of 805 nm laser diode pump energy to a broad band of mid-IR radiation between 3500 to 5500 nm. Spectroscopic measurements show that the material is suitable as a phosphor for the 4 to 5 micron spectral range that can be optically pumped with low-cost 0.8-micron laser diodes. The mid-IR emission is enabled by the low phonon energies in KPb_2Cl_5 . Energy transfer pathways, rates, and quantum efficiencies are evaluated.

¹Work supported by NSF grant ECS-0245455, ONR, NRC, and Sachs Freeman Inc.

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Date submitted: 18 Nov 2009

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