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Doped mesoporous silica thin films for chemical vapor detection JOHN COMO, JACOB AJIMO, LOUISA HOPE-WEEKS, JUYANG HUANG, KWAN CHENG, Texas Tech University — Highly luminescent lanthanide-ligand complex (LLC) doped mesoporous silica thins films were fabricated for the use in trace chemical vapor detection. Different silicate precursors were made using the solgel process and spin-coated onto a substrate. Under UV excitation, the sensitizing ligands exhibited efficient energy transfer to the lanthanide to produce a detectable luminescence in the visible spectrum. Fluorescence quenching of the LCC by direct exposure of the films to fluorophosphate vapor was observed. Sensitivity to the chemical vapor was evaluated as a function of the sol-gel pore size, surface roughness, and thickness.

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