Synthesis and characterization of a prominent NLO active MOF of lead with 1,5-naphthalenedisulfonic acid

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ABSTRACT

A new metal-organic framework of lead, $[Pb(1,5\text{-nds})(H_2O)_3]_n$ (1,5-nds = 1,5-naphthalenedisulfonate) having prominent nonlinear optical property has been prepared by single gel diffusion technique at ambient condition using sodium metasilicate. The second harmonic generation efficiency was analyzed using Kurtz and Perry powder method and was found to be 30 times as large as potassium dihydrogen phosphate (KDP). Single crystal X-ray diffraction studies reveal the crystal structure. The grown crystals were further characterized by elemental analysis, powder XRD study, thermogravimetry, FT-IR and UV-visible spectral studies. The $Pb_2S_2O_4$ rings in the crystal structure form a 1D channel. Hydrogen

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