

研究简报

超分子化合物 $[H_3N(CH_2)_3NH_3] \cdot [Pb_2(SIP)_2] \cdot 6H_2O$ 的水热合成与表征

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摘要 在水热条件下, 用 NaH_2SIP 与 $Pb(II)$ 盐, 以 1,3-丙二胺(1,3-PDA) 作为结构导向剂进行反应, 得到化合物 $[H_3N(CH_2)_3NH_3] \cdot [Pb_2(SIP)_2] \cdot 6H_2O(1)$. 同时采用单晶X射线衍射、X射线粉末衍射、元素分析、红外光谱和荧光光谱对化合物1进行了表征.

关键词 [磺酸基羧酸铅](#) [水热合成](#) [超分子](#) [单晶结构](#) [荧光](#)

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Hydrothermal Synthesis and Characterization of a New Supramolecular Compound $[H_3N(CH_2)_3NH_3] \cdot [Pb_2(SIP)_2] \cdot 6H_2O$

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Abstract A new three-dimensional supramolecule, $[H_3N(CH_2)_3NH_3] \cdot [Pb_2(SIP)_2] \cdot 6H_2O$ was synthesized under the hydrothermal condition. Its structure was determined with single crystal X-ray diffraction analysis and further characterized *via* XRD, IR, fluorescent spectrum and elemental analysis. The compound crystallizes in triclinic space group *P1*, with $a=0.79946(16)$ nm, $b=0.9881(2)$ nm, $c=1.0343(2)$ nm, $\alpha=81.25(3)^\circ$, $\beta=84.95(3)^\circ$, $\gamma=68.13(3)^\circ$, $V=0.7489(3)$ nm³, $Z=1$, $R_1=0.0226$, $wR_2=0.0486$, $GOF=1.099$. Along the [001] direction, binuclear cluster units $[Pb_2(SIP)_2]^{2-}$ link to each other *via* O1 and O4 forming two-dimensional anionic layers, then these layers are stacked down the *c* axis and was further linked by N—H...O and O—H...O hydrogen bonds to build the three-dimensional supramolecular structure. Fluorescent spectrum of compound 1 shows that there are two strong fluorescent emission peaks at $\lambda=349$ nm and 393 nm and a weak fluorescent emission peak at 384 nm ($\lambda_{max, excitation}=236$ nm).

Key words [Sulfonate-carboxylate lead](#); [Hydrothermal synthesis](#); [Supramolecule](#); [Crystal structure](#); [Fluorescence](#)

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