

论文

二维网格结构的新型配位聚合物[Zn(PDA)]_n的合成、晶体结构及荧光性质

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摘要:

以2,6-吡啶二酸为配体, 与锌盐通过水热合成法得到具有二维网格结构的新型配位聚合物[Zn(PDA)]_n (PDA=2,6-吡啶二羧酸根); 采用红外光谱、元素分析、热重分析及单晶X射线衍射等手段对[Zn(PDA)]_n的晶体结构进行了表征. 并进一步研究了[Zn(PDA)]_n的荧光性质.

关键词: 2,6-吡啶二酸 配位聚合物 网格结构 荧光性质

Syntheses, Crystal Structure and Luminescence Properties of A Novel Two-dimensional Grid Framework Coordination Polymers [Zn(DPA)]_n

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Abstract:

Pyridine-2,6- dicarboxylic acid (H₂PDA) as a very important carboxylate derivative was attracted much attention in coordination chemistry. In H₂PDA, there is a 120° angle between the central rigid pyridine ring and two carboxylate groups. Therefore, it could potentially provide various coordination motifs to form discrete or consecutive metal complexes under the appropriate synthesis condition. There are a few literatures reported about the complexes based on H₂PDA. In this paper, a new coordination polymer [Zn(PDA)]_n (H₂PDA=Pyridine-2,6-dicarboxylic acid) was synthesized with hydrothermal method, and characterized by elemental analyses, IR spectrum, TGA and single-crystal X-ray diffraction. The compound exhibits an two-dimensional(2D) grid framework structure. The crystal crystallizes in an orthorhombic system, space group of *Pbcn* with *a*=0.6730(3) nm, *b*=1.4156(6) nm, *c*=0.7299(3) nm, *V*=0.6954(6) nm³, *Z*=4. Each Zn(II) is five coordination with three PDA²⁻, and Zn(II) adopts a distorted trigonal bipyramid coordination mode. The two-dimensional(2D) grid framework structure is built by the connection of Zn(II) and PDA²⁻. The border length of the grid framework is 0.5082 nm×0.5082 nm. The two pyridine rings in the adjacent PDA²⁻ are parallel with each other, and the center distance between them is 0.39275 nm. So, weak *π-π* stacking interaction exists in the structure of [Zn(PDA)]_n. The luminescent property of [Zn(PDA)]_n was investigated. The luminescence emission spectrum of [Zn(PDA)]_n is the same as the the ligand pyridine-2,6-dicarboxylic acid, and also the two weak peaks. So, we conclude that the electron transition gap is not changed when Zn(II) coordinated to PDA²⁻.

Keywords: Pyridine-2,6-dicarboxylic acid Coordination polymer Grid framework structure Luminescence property

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