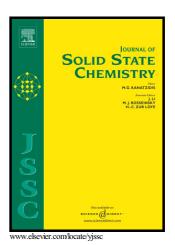
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Regulation of deprotonation of 3,3-di(1H-tetrazol-5-yl)pentanedioic acid: solvothermal synthesis of La(III) and heterometallic La(III)/Cu(II) compounds for ablation of A549 cells

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ACCEPTED MANUSCRIPT

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synthesis acid: solvothermal of La(III) heterometallic and

La(III)/Cu(II) compounds for ablation of A549 cells

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Abstract

3,3-di(1H-tetrazol-5-yl)pentanedioic acid (H₄dtzpda) can display tunable valence when reacted with different metal ions because it has four acidic hydrogen atoms of both tetrazole rings and carboxylate groups. Solvothermal reactions of H₄dtzpda with La(NO₃)₂·6H₂O or La(NO₃)₂·6H₂O/Cu(NO₃)₂·6H₂O afforded a one dimensional $[La(Hdtzpda)(H_2O)_4]\cdot 4H_2O$ **(1)** and three dimensional [La₂Cu(dtzpda)₂(H₂O)₁₀]·4H₂O (2), respectively, where only three acidic hydrogen atoms of H₄dtzpda are deprotonated in compound 1 while all the four acidic ones are deprotonated in compound 2. In compound 1, Hdtzpda³⁻ is a penta-dentate ligand to bridge La(III) centers via only oxygen atoms of the carboxylate group while in compound 2, dtzpda⁴⁻ is a hepta-dentate one via not only the oxygen atoms of the carboxylate group but also the nitrogen atoms of the tetrazole rings. PEG-5000 (poly(ethyleneglycol₋₅₀₀₀)) coated compound 1 or 2 nanoparticles (NPs) have good

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