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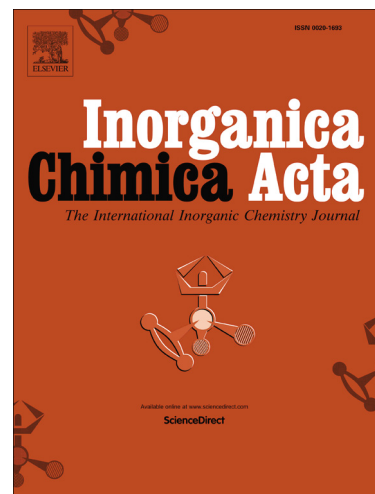
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Synthesis and Crystal Structure of $[\text{Ni}(\text{Amgu})_2]\text{X}_2$ – Novel Solid-State Precursors for NiO Nanoparticles

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Abstract

Aminoguanidine nickel complexes containing nitrate and chloride with the formula $[\text{Ni}(\text{Amgu})_2]\text{X}_2$ [$\text{X} = \text{NO}_3^-$ (**1**) and Cl^- (**2**)] were prepared and characterized by analytical, Fourier-transform infrared (FTIR) spectroscopic and single crystal X-ray diffraction studies. Compound **1** crystallized in the triclinic crystal system of space group P-1 with $Z = 1$, and compound **2** crystallized in the monoclinic crystal system of space group $\text{P2}_1/\text{n}$ with $Z = 2$. Both compounds have square planar geometry with two neutral aminoguanidine ligands acting as trans N,N-chelators. The N-N stretching of aminoguanidine ligands was corroborated by the FTIR spectroscopic peak observed at 1139 cm^{-1} . NiO nanoparticles were obtained by the decomposition of compounds **1** and **2**, which were calcined at 400°C for 4 h. The powder X-ray diffraction (PXRD) patterns confirmed that the prepared NiO nanoparticles had high purity and crystallinity. Therefore, these complexes may be used as

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