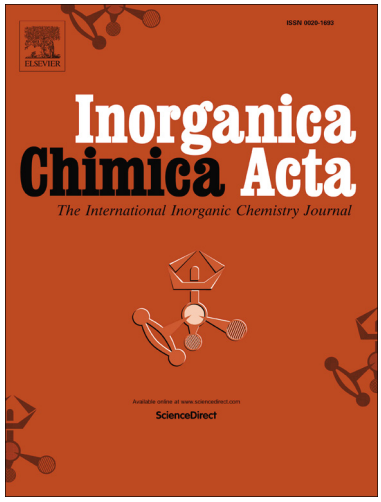

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Abstract

Aminoguanidine nickel complexes containing nitrate and chloride with the formula $[Ni(Amgu)_2]X_2$ [X = 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 $P2_1/n$ 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 ºC 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