



Ni₂₊-Fe₃₊ cyanometallate structures covalently embedded in silica: Influence of the blocking ligand at Ni₂₊

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<https://doi.org/10.1016/j.ica.2018.12.019>

Abstract

Ni(II)/Fe(III) cyanometallate structures with Si(OR)₃-substituted bis(2-aminoethyl)-1,3-propanediamine or 1,4,8,11-tetraazacyclotetradecane (cyclam) blocking ligands at Ni(II) were prepared and embedded in SiO₂ by means of sol-gel processing with Si(OEt)₄. The cyanometallates were microcrystalline before sol-gel-processing, and a double-chain structure is proposed for the silyl-substituted [Ni(tetramine)]₃[Fe(CN)₆]₂ derivatives. The 3D arrangement is lost during sol-gel processing, although Fe(III)CNCNi(II) structures are retained in the gels, as proven by FTIR and SWAXS studies. The obtained gels show paramagnetic behavior.