

Optic, magnetic and thermal properties of rhenium complexes with cysteine

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Abstract

Complexes of rhenium with cysteine were synthesized, their optical, magnetic and thermal properties were studied. It was shown that the synthesized compounds are complexes of composition $[KLH][ReX_6]$ and $[LH]_2[ReX_6]$, where $-X = Cl^-, Br^-$, $L =$ cysteine, at a molar ratio of potassium hexahalogenrhenate/amino acid = 1:1 and 1:2, respectively, characterized with non-zero electron spin and EPR spectra at the temperature of liquid nitrogen with g-factor equal to 1.92-1.93 and line width $\Delta H = 1300-1400$ Qs. It was shown that at the reaction conditions cysteine is protonated through the nitrogen atoms of amino groups and exists in the complexes as a outer-sphere cation; distinctive features of thermal stability, aggregative and solvation stability of the synthesized complexes were identified. It was shown that the solid products of thermal decomposition of these complexes in a stream of nitrogen and air are rhenium (metallic) and rhenium oxides, respectively.

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