Bipodal acylthiourea ligands as building blocks for Bi-, Tetra-, and polynuclear oxorhenium(V) complexes

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Abstract: Reactions of (NBu₄)[ReOCl₄] and 3,3,3′,3′-tetraalkyl-1,1′-isophthaloylbis(thioureas), H₂phth(R₂tu)₂ where R = Et, i-Bu, in hot MeOH with the addition of Et₃N give red products of the composition [ReO(OMe){phth(R₂tu)₂}]₂ (8a, R = Et; 8b, R = i-Bu). X-ray structures of 8 reveal symmetric binuclear complexes containing two almost coplanar organic ligands, each of which coordinates to two rhenium centers via the two bidentate-O,S moieties. The octahedral coordination spheres of the rhenium atoms are completed by each one oxo and one methoxido ligand which are directed perpendicular to the plane defined by the {phth(R₂tu)₂}²⁻ ligands. While in 8a, both methoxido ligands point to the same side of the described plane and form a syn isomer, the MeO⁻ ligands in 8b are located at opposite sides and form an anti isomer. Studies in solution show that there exists a reversible equilibrium between the anti and syn isomers. Dimerization/condensation of complexes 8 with the formation of tetrannuclear complexes of the composition [{ReO{phth(R₂tu)₂}}₂O]₂ (9) and/or polynuclear species is observed in solutions, which do not contain MeOH. © 2010 American Chemical Society.

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