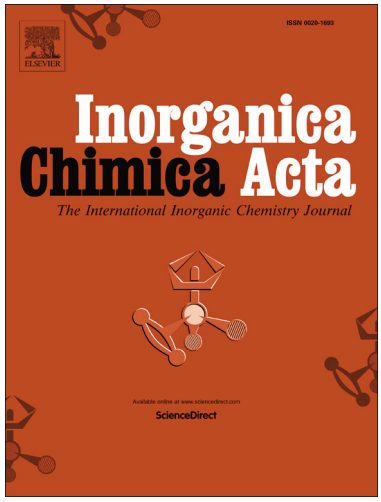

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Coordination-driven self-assembly of arene ruthenium metalla-rectangles

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Abstract

Series of tetranuclear arene ruthenium complexes of the general formula $[Ru_4(p\text{-cymene})_4(\mu_2\text{-N}\cap\text{N})_2(\mu_4\text{-OO}\cap\text{OO})_2][CF_3SO_3]_4$ (N∩N = 2,5-dipyridyl-thiophene (dptp), 3,6-dipyridyl-1,2,4,5-tetrazine (dptz), 3,6-dipyridyl-1,4-dihydro-1,2,4,5-tetrazine (dpdt)) were prepared by reacting the dinuclear arene ruthenium complexes $Ru_2(p\text{-cymene})_2(\mu_4\text{-OO}\cap\text{OO})Cl_2$ (OO∩OO = oxalato (oxa), 2,5-dioxido-1,4-benzoquinonato (dobq), 2,5-dichloro-1,4-benzoquinonato (dClbq), 2,5-dioxido-3-undecyl-1,4-benzoquinonato (dubq), 5,8-dioxido-1,4-naphtoquinonato (donq)) with silver trifluoromethanesulfonate, followed by the addition of the corresponding N∩N linkers. All metalla-rectangles were characterized by standard techniques, including infrared, UV-visible, ^1H, ^{13}C NMR spectroscopy and ESI mass spectrometry: Thus confirming the rectangular structure of the complexes, and showing the facility of forming tetranuclear arene ruthenium metalla-rectangles.

Keywords: Supramolecular chemistry; Arene ruthenium complexes; Metalla-assemblies; Metalla-rectangles; Half-sandwich complexes.