The Inclusion of Organometallic Derivatives of Cyclotriphosphazenes Inside SiO 2 Matrix and Their Conversion to Nanostructured Metal-Oxides and Phosphates

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Organometallic derivatives of the cyclotriphosphazene N 3P 3[OC 6H 4CH 2CN·TiClCp 2] 6(1), N 3P 3(O 6H 5) 5[OC 6H 4N·W(CO) 5] (2), N 3P 3[OC 6H 4CH 2CN·Mo(CO) 5] 6(3), [N 3P 3(O 6H 5) 5(OC 5H 4N·CpRu(PPh 3) 2)][PF 6] (4), [N 3P 3(O 2C 12H 8) 2OC 5H 4N·Ag(PPh 3)][OSO 2CF 3] (5), N 3P 3[OC 6H 5] 5 [OC 5H 4N·Cu][PF 6] (6) and N 3P 3[OC 6H 4CH 2CN·CuCl] 6[PF 6] 6(7),were incorporated inside SiO 2 through the sol-gel method. The metal-organic nanocomposites of the general formula N 3P 3[OC 6H 4CH 2CN·TiClCp 2] 6·nSiO 2(G 1), N 3P 3[OC 6H 4N·W(CO) 5]·nSiO 2(G 2), N 3P 3[OC 6H 4CH 2CN·Mo(CO) 5] 6·nSiO 2(G 3), N 3P 3(O 6H 5) 5OC 5H 4N·CpRu(PPh 3) 2][PF 6]·nSiO 2(G 4), [N 3P 3(O 2C 12H 8) 2OC 5H 4N·Ag(PPh 3)][OSO 2CF 3]·nSiO 2(G 5), N 3P 3[OC 6H 5] 5[OC 5H 4N·Cu][PF 6]·(SiO 2) n(G 6), and N 3P 3[OC 6H 4CH 2CN·CuCl] 6[PF 6] 6·(SiO 2) n(G 7), were characterized by IR spectroscopy; 12C, 31 P and 29Si MAS NMR measurements as well as UV-Visible diffuse reflectance spectra, indicating the presence of