

A facile organometallic-induced cross-linking of copolymers of phosphazene

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Incorporation of the organometallic fragments $ML_n = CpFe(dppe)I$ and $CpRu(PPh_3)_2Cl$ to the random copolymers $[\{NP(O_2C_2H_8)\}_0.8\{NP(OC_6H_4CH_2CN)_2\}_0.15\{NP(OC_6H_4CH_2CN)(OC_6H_5)\}_0.05]_n$ (1) $[\{NP(O_2C_2H_8)\}_0.55\{NP(OC_6H_4CH_2CN)_2\}_0.2\{NP(OC_6H_4CH_2CN)(OC_6H_5)\}_0.25]_n$ (2) produce the new compounds of the approximate composition: $[\{NP(O_2C_2H_8)\}_x\{NP(OC_6H_4CH_2CN \cdot ML_n)_2\}_y\{NP(OC_6H_4CH_2CN \cdot ML_n)(OC_6H_5)\}_z]_n$. The iron derivatives in solution undergo deprotonation of the dppe, probably caused by a polymeric matrix, which in turn causes a spontaneous cross-linking affording sparingly, soluble materials. Thermal analysis of the compounds using DSC and DTA techniques indicates that the incorporation of the organometallic fragment in the copolymer produces materials, which leave an amount of residue depending on the metal, as well as on the functionalization degree of the cyanide groups. Incorporation of the organometallic fragments to the polymer does not produce an improved conductivity in comparison to the insu