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Radical Cations of Phosphorous Amides in Reactions with Alkenes

Romakhin A., Zagumennov V., Nikitin E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Electrochemical oxidation of diethyl diethylphosphoramidite and ethyl tetraethylphosphorodiamidite in the presence of alkenes results in formation of amido(1-alkenyl)- and amido(2-alkenyl)phosphonates. Under the same conditions, hexaethylphosphorous triamide forms a dodecaethylhexaaminodiphosphonium salt. Electrochemical oxidation of the above phosphoramidites and -diamidites in the presence of diethyl hydrogen phosphite or O,O-dibutyl hydrogen thiophosphite and an alkene involves addition of (RO)2P(O,S)H at the multiple bond and yields a different ratio of isomeric mono- and diamidoalkenylphosphonates.