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Thermal stability of primary and secondary phosphine oxides formed as a reaction of phosphine oxide with ketones

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Abstract

© 2016 Taylor & Francis Group, LLC.We present the study of reactivity of electrochemically generated in situ from white phosphorus P4 phosphine oxide H3PO toward various ketones (acetone, methylethylketone, methyl-n-propylketone). This interaction was found to give a selective formation of mono- and bis-(α-oxyalkyl)phosphine oxides RR′C(OH)P(O)H2 (1) and (RR′C(OH))2P(O)H (2) where R = Me; R′ = Me, Et, n-Pr. Thermal properties of the formed primary and secondary phosphine oxides have been studied and quantum chemical calculations of thermodynamic stability of these compounds were performed.

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Keywords

DFT calculations, Electrochemistry, ketones, phosphine oxide, white phosphorus