

Phosphorus, Sulfur and Silicon and the Related Elements 2013 vol.188 N1-3, pages 61-62

Synthesis of phosphorylated piperazines

Khusainova N., Pogodina E., Berdnikov E., Galkina I., Galkin V.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Heating 3-methyl-1,2-butadienyl phosphonates with piperazine leads to the formation of 2-piperazinyl-butenyl phosphonates containing the enamine functionality. From the reaction of piperazine with four equivalents of 1,2-butadienyl phosphonate a bis(phosphonate) is obtained, in which the piperazine bridge links two phosphorylbutene fragments. © 2013 Copyright Taylor and Francis Group, LLC.

<http://dx.doi.org/10.1080/10426507.2012.741158>

Keywords

3-methyl-buta-1,2-dienyl phosphonates, addition, Allenes, enamines, piperazine