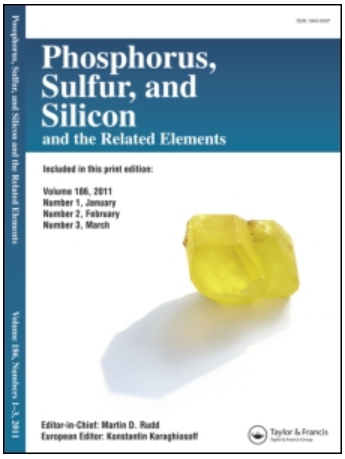



**Phosphorus, Sulfur, and Silicon and the Related Elements**
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

# Synthesis of α-Aminophospiionic Esters by Solid-Liquid Phase Transfer Catalysis

J. P. Genet[a]; J. Uziel[a]; Y. Janin[a]; A. M. Touzin[a]; S. Juge[a]
[a] Laboratoire de synthese organique chimio et stéréo sélective E.N.S.C.P 11 rue P. et M.Curie, Paris, France

**To cite this Article** Genet, J. P. , Uziel, J. , Janin, Y. , Touzin, A. M. and Juge, S.(1990) 'Synthesis of α-Aminophospiionic Esters by Solid-Liquid Phase Transfer Catalysis', Phosphorus, Sulfur, and Silicon and the Related Elements, 51: 1, 412
**To link to this Article: DOI:** 10.1080/10426509008040939
**URL:** http://dx.doi.org/10.1080/10426509008040939

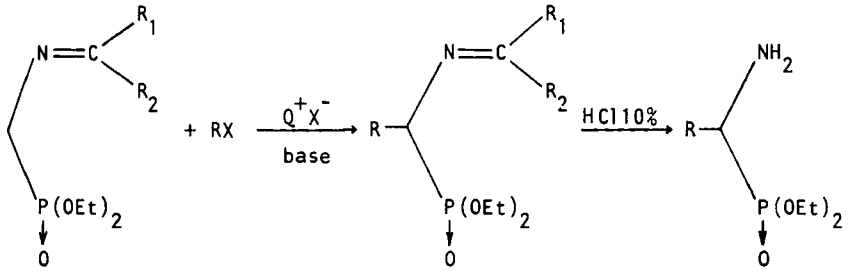
*Phosphorus, Sulfur, and Silicon*, 1990, Vols. 51/52, p. 412
Reprints available directly from the publisher
Photocopying permitted by license only



# SYNTHESIS OF α-AMINOPHOSPHONIC ESTERS BY SOLID-LIQUID PHASE TRANSFER CATALYSIS

J.P.GENET*, J.UZIEL, Y.JANIN, A.M.TOUZIN and S.JUGE
Laboratoire de synthese organique chimio et stéréo-sélective E.N.S.C.P 11 rue P. et M.Curie 75231 Paris France

(1-aminoalkyl)phosphonic acids are important amino acids with interesting biological properties (1). They are available by various procedures (2). However, a potentially efficient and direct route not very well documented is the use of schiff bases derived from diethyl-aminomethylphosphonate. These substrates have been used to prepare α-alkylated phosphonic aminoacids using strong bases under anhydrous conditions (3). We report here a simple method using solid-liquid phase transfer catalysis (PTC) as well as solid-liquid PTC without solvent:




1 $R_1$=$R_2$=Ph
2 $R_1$=H $R_2$=p ClPh

3

4

The successful utilisation of Aliquat 336 in PTC which is a non-solid quaternary ammonium salt led us to investigate the alkylation reaction of 1 without solvent. In fact the reaction proceed with methyl iodide or allyl, propargyl, alkyl, benzyl bromides in very good yields (70-90%) with exclusive formation of the monoalkylated products. Under these conditions aldimine 2 and allyl bromide give only the diallylated product with a poor yield of 30%. The described procedure provides a simple and inexpensive method for the synthesis of α-alkylaminophosphonic esters 4.

1-a) D.Redmore "Topics in phosphorus chemistry" E.J.Griffith and M. Grayson, Ed.Vol. 8, John Wiley and Sons, N.Y., 1976; b) K.A.Petrov, V.A.Chauzov and T.S.Erokhina, Russ.Chem.Rev., 1974, 43, 984; c) P.Kafarski and P.Mastarlerz "Aminophosphonates: Natural occurence, biochemistry and biological properties" Beiträge zur Wirkstofforshung, Heft 21, Berlin, 1984.
2-For some recent synthesis see: a) C.Yuan and Y.Qi, Synthesis, 1986, 821; b) R.Huber and A.Vasella, Helv.Chim.Acta, 1987, 70, 144 and references cited therein.
3-a) A.Dehnel and G.Lavielle, Bull.Soc.Chim., France, 1978, II, 95; b) U.Schöllkopf and R.Schütze, Liebigs Ann.Chem., 1987, 45.