

This article was downloaded by:

On: 28 January 2011

Access details: Access Details: Free Access

Publisher Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



## 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>

### Evidence of Long-Range $^{13}\text{C}$ - $^{31}\text{P}$ Couplings: A $^{13}\text{C}$ NMR Investigation of Some Aryl Esters of Phosphor-Amidochloridic Acid and the Related Compounds

Saiid Dehghanpour-farashah<sup>a</sup>; Amir H. Mahmoudkhani<sup>b</sup>; Abbas Eslami<sup>a</sup>; Khodayar Gholivand<sup>a</sup>

<sup>a</sup> Dept. of Chemistry, Tarbiat Modarres University, Tehran, Iran <sup>b</sup> Dept. of Inorganic Chemistry, Göteborg University and Chalmers University of Technology, Göteborg, Sweden

**To cite this Article** Dehghanpour-farashah, Saiid , Mahmoudkhani, Amir H. , Eslami, Abbas and Gholivand, Khodayar(1999) 'Evidence of Long-Range  $^{13}\text{C}$ - $^{31}\text{P}$  Couplings: A  $^{13}\text{C}$  NMR Investigation of Some Aryl Esters of Phosphor-Amidochloridic Acid and the Related Compounds', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 147: 1, 233

**To link to this Article:** DOI: 10.1080/10426509908053597

**URL:** <http://dx.doi.org/10.1080/10426509908053597>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

## Evidence of Long-Range $^{13}\text{C}$ - $^{31}\text{P}$ Couplings: A $^{13}\text{C}$ NMR Investigation of Some Aryl Esters of Phosphor-Amidochloridic Acid and the Related Compounds

SAIID DEHGHANPOUR-FARASHAH<sup>a</sup>,  
AMIR H. MAHMOUDKHANI<sup>b</sup>, ABBAS ESLAMI<sup>a</sup> and  
KHODAYAR GHOLIVAND<sup>a</sup>

<sup>a</sup>*Dept. of Chemistry, Tarbiat Modarres University, Tehran, IRAN and*

<sup>b</sup>*Dept. of Inorganic Chemistry, Göteborg University and Chalmers University of  
Technology, S-412 96, Göteborg, SWEDEN.*

In  $^{13}\text{C}$  NMR study organophosphorus compounds, sign and magnitude of  $^{13}\text{C}$ - $^{31}\text{P}$  spin-spin couplings has been of great interest to elucidate stereochemistry and electronic state of phosphorus central atom. However, a discussion about the mechanisms of carbon-phosphorus couplings is still complicated specially in the case of long-range couplings that also are not frequently observed. In this study,  $^{13}\text{C}$  NMR chemical shifts and coupling constants have been determined for a series of aryl esters of phosphoramidochloridic acid with the general formula:  $\text{R}_2\text{NP}(\text{O})(\text{OAr})\text{Cl}$ , in which R = methyl and/or benzyl, Ar = *p*-tolyl, *p*-nitrophenyl, and phenyl. Besides usual W-couplings that could be found in these systems, we detected long-range couplings through five and six bonds. It has been shown that, these couplings are highly dependent on substituents on phosphorus nuclei. The data for some related compounds have been also obtained for a comparison.