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

# Phosphorylation of Electron-Rich Aromatic and Heteroaromatic Carboxylic Acid Derivatives

Alexej A. Čhekotylo<sup>a</sup>; Alexej O. Pushechnikov<sup>a</sup>; Alexander A. Yurchenko<sup>a</sup>; Andrej A. Tolmachev<sup>a</sup>; Alexander M. Pinchuk<sup>a</sup>

<sup>a</sup> National Academy of Sciences of Ukraine, Ukraine

Online publication date: 27 October 2010

**To cite this Article** Chekotylo, Alexej A. , Pushechnikov, Alexej O. , Yurchenko, Alexander A. , Tolmachev, Andrej A. and Pinchuk, Alexander M.(2002) 'Phosphorylation of Electron-Rich Aromatic and Heteroaromatic Carboxylic Acid Derivatives', Phosphorus, Sulfur, and Silicon and the Related Elements, 177: 8, 2185

To link to this Article: DOI: 10.1080/10426500213283 URL: http://dx.doi.org/10.1080/10426500213283

### 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.

Phosphorus, Sulfur and Silicon, 2002, Vol. 177:2185 Copyright © 2002 Taylor & Francis 1042-6507/02 \$12.00 + .00 DOI: 10.1080/10426500290095340 OR & FRA

## PHOSPHORYLATION OF ELECTRON-RICH AROMATIC AND HETEROAROMATIC CARBOXYLIC ACID DERIVATIVES

Alexej A. Chekotylo, Alexej O. Pushechnikov, Alexander A. Yurchenko, Andrej A. Tolmachev, and Alexander M. Pinchuk National Academy of Sciences of Ukraine, Ukraine

(Received July 29, 2001; accepted December 25, 2001)

Hitherto unknown direct phosphorylation of electron-rich aromatic and heteroaromatic acid derivatives was used for synthesis of different fused phosphorus-containing heterocycles **1–5**. These systems undergo hydrolitical cleavage of a phosphorus-containing ring resulting in *o*-phosphorylated derivatives of aromatic acids **6,7**. 2,3-Dihydro-1*H*-3-phosphindolone **5** undergoes ring transformation into dihydrophosphindolo[3,2-c]pyrazole **8** upon treatment with hydrazine.

**SCHEME 1** 

#### REFERENCES

- A. A. Chekotylo, A. A. Yurchenko, and A. A. Tolmachev, Khim. Geterotsikl. Soedin., 4, 569 (2001).
- [2] A. O. Pushechnikov, D. G. Krotko, D. M. Volochnyuk, and A. A. Tolmachev, Synlett., 6, 860–862 (2001).

Address correspondence to Alexander M. Pinchuk, Institute of Organic Chemistry, National Academy of Sciences of Ukraine, Murmanskaya, 5, Kiev-094, 02094, Ukraine. E-mail: hetfos@ukrpack.net