

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>

### Biorelevant Phosphonic Acids - Protonation and Complexformation Equilibria

J. Ollig<sup>a</sup>; M. Morbach<sup>a</sup>; G. Hägele<sup>a</sup>; E. Breuer<sup>b</sup>; K. Killner<sup>c</sup>

<sup>a</sup> Institute of Inorganic Chemistry and Structural Chemistry I, Heinrich-Heine-University Düsseldorf, Dusseldorf, Germany <sup>b</sup> Department of Pharmaceutical Chemistry, School of Pharmacy, The Hebrew University of Jerusalem, Jerusalem, Israel <sup>c</sup> Dr. Felgenträger & Co. Öko-Chem. and Pharma GmbH, Dessau, Germany

**To cite this Article** Ollig, J. , Morbach, M. , Hägele, G. , Breuer, E. and Killner, K.(1996) 'Biorelevant Phosphonic Acids - Protonation and Complexformation Equilibria', *Phosphorus, Sulfur, and Silicon and the Related Elements*, 111: 1, 55

**To link to this Article:** DOI: 10.1080/10426509608054684

**URL:** <http://dx.doi.org/10.1080/10426509608054684>

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.

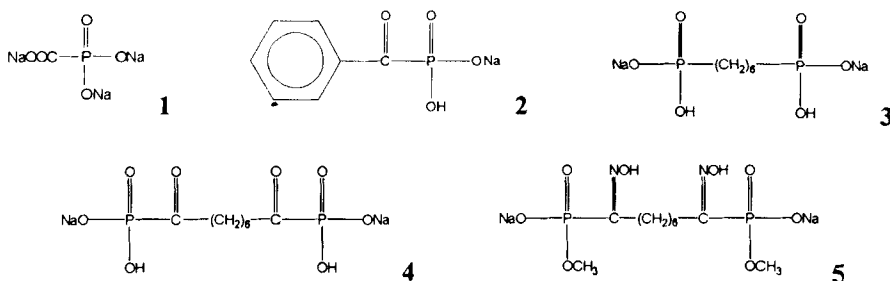
## BIORELEVANT PHOSPHONIC ACIDS - PROTONATION AND COMPLEXFORMATION EQUILIBRIA

J. OLLIG\*, M. MORBACH\*, G. HÄGELE\*, E. BREUER°  
 and K. KELLNER#

- \* Institute of Inorganic Chemistry and Structural Chemistry I, Heinrich-Heine-University Düsseldorf; Universitätsstraße 1; D-40225 Düsseldorf, Germany
- ° Department of Pharmaceutical Chemistry, School of Pharmacy, The Hebrew University of Jerusalem, Jerusalem 91120, Israel
- # Dr. Felgenträger & Co. Öko-Chem. and Pharma GmbH, Seminarplatz 3, D-06846 Dessau, Germany

Various methods of NMR- and PC-controlled titrations were developed in our laboratories. In addition to the by now well-investigated  $^{31}\text{P}$ - we applied  $^{13}\text{C}$ -,  $^1\text{H}$ -,  $^{19}\text{F}$ - and  $^{113}\text{Cd}$ -NMR controlled titrations. Here we report about the methodical progress and results obtained from acylphosphonic acids and corresponding hydroxyimino derivatives - as shown below - which gained interests as potentially anti-viral agents:

Tri-sodium-phosphono-formiate (FOSCARNET) **1**, Sodium-benzoyl-phosphonate **2**, Di-sodium-1,6-hexane-bis-phosphonate **3**, Di-sodium-1,8-di-oxo-1,8-octane-bis-phosphonate **4**, Di-sodium-1,8-bis-hydroxyimino-1,8-octane-bis-phosphonate **5**:



Particular attention was drawn towards the novel bis-acylphosphonates and corresponding hydroxyimino structures. By PC-guided high precision titrations and  $^{31}\text{P}\{^1\text{H}\}$ -NMR purity, decomposition, protonation and stability constants for the formation of calcium complexes were monitored.

Further applications concern the concept of micro dissociation equilibria of amino phosphinic acids and phosphino carboxylic acids.

This work was supported by the German-Israel-Foundation for Scientific Research and Development.