

WSeS-6



**Wrocław University
of Science and Technology
Wrocław, Poland**

22-23 September 2017

**6th Workshop
of SeS Redox and Catalysis**

**a multidisciplinary international
scientific network**

**Wrocław University
of Science and Technology
Wrocław, Poland**

22-23 September 2017

**Book of Abstracts of 6th Workshop
of SeS Redox and Catalysis
Editors: Elżbieta Wojaczyńska, Jacek Wojaczyński**

**All rights reserved. No part of this book may be reproduced,
stored in a retrieval system, or transmitted in any form or by any means,
without the prior permission in writing of the Publisher.**

© Copyright by Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2017

ISBN 978-83-7493-991-1

**Oficyna Wydawnicza Politechniki Wrocławskiej
Wybrzeże Wyspiańskiego 27, 50-370 Wrocław
<http://www.oficyna.pwr.edu.pl>
oficwyd@pwr.edu.pl**

Print and binding: beta-druk, www.betdruk.pl

P15: Eco-friendly synthesis of β -hydroxyphenylselenides

Julianna Mruk¹, Agata J. Pacuła¹, Claudio Santi², Jacek Ścianowski¹

¹ Department of Organic Chemistry, Faculty of Chemistry,

Nicolaus Copernicus University, 7 Gagarin Street, 87-100 Toruń, Poland;

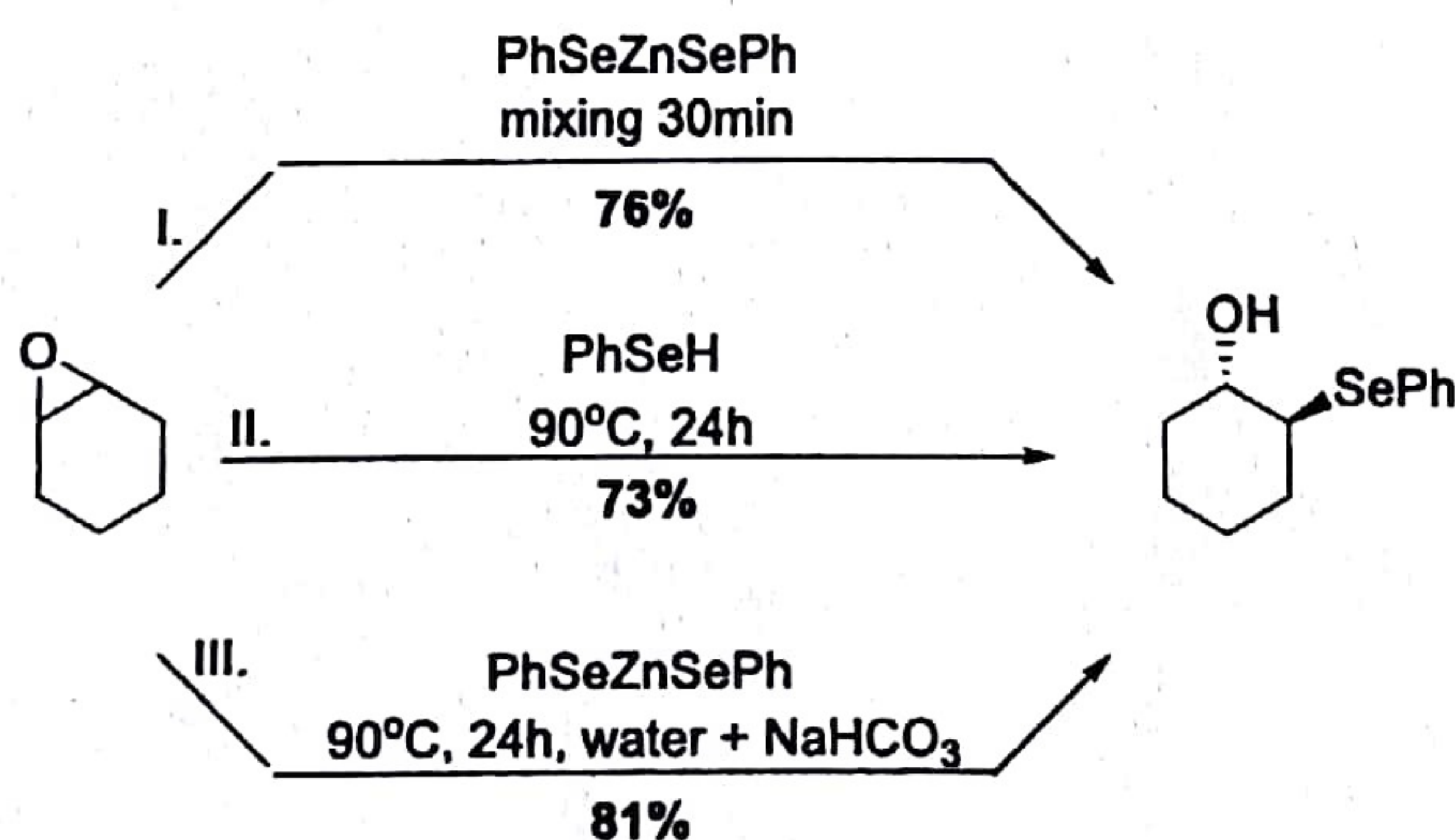
julianna@doktorant.umk.pl; ² Department of Pharmaceutical Sciences, Group

of Catalysis and Organic Green Chemistry, University of Perugia, Via del Liceo 1-06100 Perugia Italy;



Constantly growing interest in the chemistry of organoselenium compounds is due to their biological activity, e.g. antioxidant properties affecting many common civilization diseases, applications in functional organic materials, as well as in food chemistry and applicability as reagents and catalysts in organic synthesis. Considering the significance of β -hydroxyphenylselenides, these compounds are valuable intermediates in the synthesis of allylic alcohols, olefins, epoxides and vinyl selenides. Therefore, the development of a new economical methods of their synthesis is particularly interesting.^{1,2}

Herein, we present the synthesis of β -hydroxyphenylselenides as a result of epoxide ring opening via three different methods. The first one was based on mechanochemical mixing of epoxides with PhSeZnSePh reagent. The next, a solvent-free approach including heating of benzeneselenol with epoxides at 90 °C. The last procedure was based on the reaction of epoxides and di(phenylselenenyl)zinc in water. Selenium reagent PhSeZnSePh was prepared by the reaction of diphenyl diselenide and zinc dust, under ultrasound irradiation in the presence of THF and a catalytic amount of 10% HCl solution.³ The control of the reaction condition by the addition of NaHCO₃ determines the stereochemistry of the obtained products.



Scheme 1. Syntheses of β -hydroxyphenylselenides

References

1. J. Ścianowski, M. Wełniak, *Phosphorus, Sulfur and Silicon*, 2009, 184, 1440-1447.
2. A. J. Pacuła, J. Ścianowski, *Current Green Chemistry*, 2016, 3, 36-50.
3. B. Monti, L. Sancineto, L. Abenante, E. Giorgi, L. Bagnoli, F. Marini, E. Lenardao, C. Santi, C. *The 20th Int. Electron. Conf. Synth. Org. Chem.*, 1–30 November 2016.