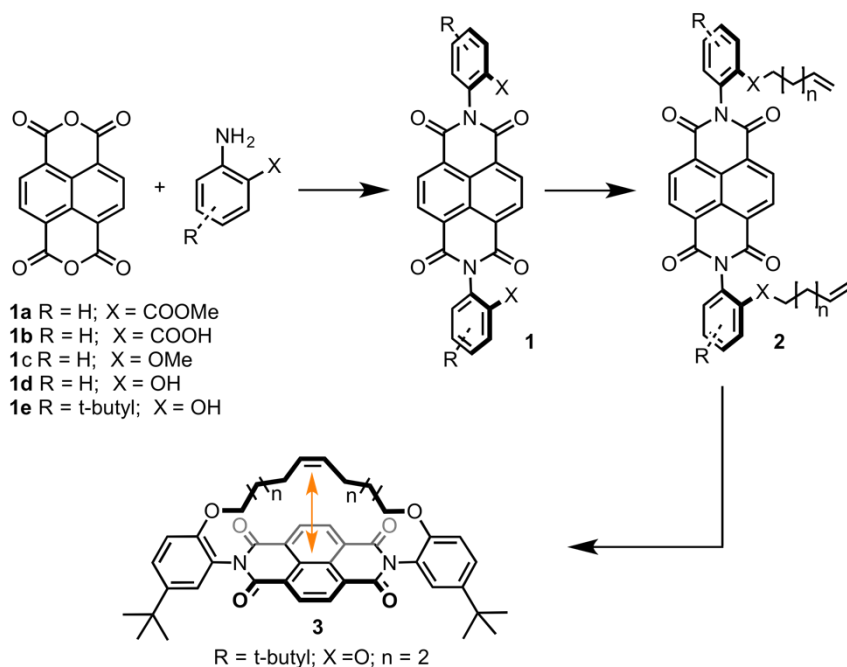


# SYNTHESIS OF ALKENE-STRAPPED NAPHTHALENE DIIMIDES AS MODEL SYSTEMS TO PROBE ALKENE $\pi$ -AROMATIC $\pi$ INTERACTIONS

Ugnė Rimkaitė, Ieva Karpavičienė, Edvinas Orentas

<sup>1</sup>Vilnius University, Faculty of Chemistry and Geosciences, Naugarduko 24, LT-03225, Vilnius, Lithuania  
[ugnerimkaite@gmail.com](mailto:ugnerimkaite@gmail.com)

Derivatives, that contain naphthalene diimide (NDI) frameworks are considered to be the strongest organic  $\pi$ -acids. [1] This unique property, together with their ability to self-assemble into multilayered structures, render NDI derivatives promising materials for new molecular optoelectronic and electronic devices [2], bioactivatable cross-linking agents [3], anion sensors, and  $\pi$ -acid organocatalysts [4]. In our research, we sought to explore the highly electron deficient aromatic system of NDIs for the modulation of the electron density of alkene double bonds, located on top of the NDI's  $\pi$ -acidic surface. Toward this goal, a collection of symmetric preorganized NDI derivatives, possessing cyclic alkene motifs, was synthesized and characterized.



The starting NDIs were obtained from corresponding aniline derivatives and commercially available 1,4,5,8-naphthalenetetracarboxylic dianhydride. The synthetic procedure was initially optimized for 2-amino-*tert*-butyl-phenol derived intermediate **1d**, which was then utilized for the synthesis of bis-alkene **2**. The latter was subjected to olefin metathesis reaction to provide model compound **3** in good yield.

[1] Y. Zhao, N. Sakai, S. Matile, *Nature Commun.*, **5**, 3911 (2014)

[2] Y. Ofir, A. Zelichenok, S. Yitzchaik, *J. Mater. Chem.*, **16**, 2142–2149 (2006)

[3] M. Di Antonio, F. Doria, M. Mella, D. Merli, A. Profumo, M. Freccero, *J. Org. Chem.*, **72**, 8354–8360 (2007)

[4] H. Ke, L. Wang, Y. Chen, M. J. Lin, J. Z. Chen, *J. Molec. Catalys. A: Chem.*, **385**, 26–30 (2014)