

Division of Organic Chemistry

Carbohydrate Research Group



Current research works

- The group is part of the consortium, which conducts research on the project - "Sugars renewable raw materials for the synthesis of products with high added value" (<http://cukry.ch.pw.edu.pl/>). The project is financed by the European Union under the Operational Programme Innovative Economy – Project POIG.01.01.02-14-102/09.

Studies carried out by the group include:

- Synthesis of iminosugars, with quaternary carbon atom at nitrogen atom, from sugars.
- Synthesis of nanomolecules sugar-fulleren, sugar-nanotube and other functional sugars and iminosugars; studies their biological and catalytically activity



Selected publications

- M. Koszytkowska-Stawinska, E. Mironiuk-Puchalska, W. Sas, *Synthesis of 1-pyrroline 1-oxides analogous to pseudouridine*, Tetrahedron Lett., 52, 1866 (2011).
- P. Gebarowski, W. Sas, *Asymmetric synthesis of novel polyhydroxylated derivatives of indolizidine and quinolizidine by intramolecular 1,3-dipolar cycloaddition of N-(3-alkenyl)nitrones*, Chem. Commun., 915 (2001).
- M. Koszytkowska-Stawinska, W. Sas, E. De Clercq, *Synthesis of aza-analogues of Ganciclovir*, Tetrahedron, 62, (2006).
- M. Koszytkowska-Stawinska, E. De Clercq, J. Balzarini, *Synthesis and antiviral activity evaluation of acyclic 2'-azanucleosides bearing a phosphonmethoxy function in the side chain*, Bioorg. Med. Chem., 17, 3756 (2009).
- M. Poplawska, G. Z. Żukowska, S. Cudziło, M. Bystrzejewski, *Chemical functionalization of carbon-encapsulated magnetic nanoparticles by 1,3-dipolar cycloaddition of nitrile oxide*, CARBON, 48, 1318 (2010).
- L. Synoradzki, T. Rowicki, M. Włostowski *Calcium pantothenate. Part 2. Optimisation of oxynitrilase-catalysed asymmetric hydrocyanation of 3-hydroxy-2,2-dimethylaldehyde: Synthesis of (R)-pantolactone*, Org. Process Res. Dev., 10, 103 (2006).

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Research profile

Synthesis of polyhydroxylated indolizidine and quinolizidine derivatives from sugars by intramolecular 1,3-dipolar cycloaddition of *N*-(3-alkenyl) nitrones.

Synthesis of iminosugars from sugars with high economy carbon atoms – synthesis of indolizidine and perhydro-pirydyno[1,2-a]azepine derivatives.

Synthesis of nucleoside analogues with 1,2,3-triazole linker.

Synthesis of nucleoside analogues – nucleobase–iminosugars with 1,2,3-triazole linker.

Synthesis of hybrids: sugar-fullerene, sugar-carbon nanotube and sugar-carbon encapsulated magnetic nanoparticles by 1,3-dipolar cycloaddition of sugar-nitrile oxides, sugar-azides and sugar azomethine ylides.

Synthesis of functional sugars and iminosugars and studies of their biological or catalytic activity.