

**Project 2.14. Synthesis of structurally diverse medium- and large-sized rings by controlled decomposition of tetraoxanes and related compounds**

**Supervisor:** Bartłomiej Furman

**Institute:** Institute of Organic Chemistry of the Polish Academy of Sciences  
M. Kasprzaka 44/52, 01-224 Warsaw, Poland

**Unit:** Polish Academy of Sciences

**WWW:** [www.icho.edu.pl](http://www.icho.edu.pl)

**Background:**

This project's main task is to establish a reliable methodology of conversion of readily available, stable and safe to use tetraoxanes and hexaoxonanes derived from available cyclic ketones to medium- and large-size carbo- and heterocycles via thermal or photochemical fragmentations.

In the proposed research four major, partially overlapping topics will be addressed:

1. thermal decomposition of tetraoxanes and related compounds: optimization and scope
2. synthesis of highly functionalized macrolactones via photochemical tetraoxanes decomposition
3. synthesis and characterization of chiral macrocycles and novel polyhydroxyl macrolides
4. utilization of the developed methodology in synthesis of variously functionalized crown and aza-crown ethers of diverse size

**Aim:**

Our ambition is to establish a reliable methodology that will allow for conversion of readily available organic molecules into useful, inaccessible by conventional means, medium- and large-size rings.

**Requirements:**

Candidate must have successfully completed scientific higher education in Chemistry with an emphasis on Organic Chemistry and possess practical laboratory, analytical, and writing skills. Candidate should be highly motivated, well organized and enthusiastic.