

**"Advanced organic synthesis: new trends, new tools" by Professor Karol Grela, Faculty of Chemistry, University of Warsaw: Tuesdays 15:00-17:00 and Thursday 17:00-19:00 (room 141), first meeting at November 4, 2010**

30 h Specialization

**Course description:**

The lecture covers important modern organic reactions and strategies in organic synthesis. The following topics will be *inter alia* covered:

1. Olefin metathesis: principles and applications in target oriented synthesis. Catalysts design. Ring closing metathesis: catalysts, scope and limitations. Olefin cross metathesis: selecting proper substrates, control of selectivity, limitations. Critical analysis of selected total syntheses of natural and biologically active compounds. Comparison with "classical" olefination methods (Wittig, McMurry, Julia-Kocienski etc).
2. Enyne cycloisomerisation and tandem reactions as a powerful tool in formation of advanced cyclic skeletons. Exercising the retrosynthetic analysis and strategies. Examples of applications in target oriented synthesis.
3. Olefination methods in organic chemistry. Tebbe, Petasis and "in-situ" reagents. Tips and tricks.
4. Alkyne metathesis as a method of fully stereoselective formation of C-C double bonds. Analysis of selected applications in target oriented synthesis.
5. N-heterocyclic carbenes as ligands and catalysts in organic synthesis. Organocatalysis.
6. Palladium catalysed C-C bond forming reactions: transformation types, principles, scope and limitations. Analysis of selected total syntheses of natural and biologically active compounds. Comparison with other C-C bond forming reactions.

**Required background:**

Completed course of organic chemistry.

**Form of assessment:**

Based on presence and exercises and a final test.

**Remarks:**

Hand-outs and reference literature will be available in advance from <http://www.karolgrela.eu/teaching/>