

Dr. Ábrányi-Balogh Péter email: abranyi-balogh.peter@ttk.mta.hu

Title of the research topic:

Domino multicomponent reactions for the synthesis of biologically important compounds

Description of the research topic:

Investigating the main trends in organic and medicinal chemistry, recent studies presented that only a small number of organic molecules from the whole chemistry space with poor variety have already been prepared and a limited number reactions dominate among synthetic applications [1-3]. Therefore, it is highly encouraged to develop innovative chemistries such as organocatalysis, C-H bond activation, metathesis, cascade reactions, click chemistry and multicomponent reactions (MCRs). Moreover, in order to expand the boundaries in reaction parameters, new technologies are emerging such as high pressure chemistry, microwave technology, electrochemistry, photocatalysis, microreactor and flow chemistry [4]. Besides, the “green” applications in organic synthesis (atomic efficiency, one-pot procedures, selective reactions) are getting important in laboratory and also in industrial practice [5].

The main goal of our research is the development of new synthetic pathways to biologically active compounds and new heterocyclic cores through multicomponent cascade reactions, that unify the advantages of the two approaches. We aim to use the toolbox of modern synthetic chemistry such as photocatalysis, C-H activation and flow chemistry. With the conscious implementation of new chemistries, reaction design and catalytic initiatives, we are trying to broaden the known chemical space.