

Nature utilizes the twenty amino acids set to generate an array of proteins with diverse structures and functions. The folding and assembly of protein biomolecules are two of the most important features here. However, despite that there are a large number of enzymes; there are also many reactions with no known enzymatic equivalent. Thus, the promise of constructing enzyme - like catalysts, which are capable of efficiently catalyzing virtually any chemical reaction is a tremendous challenge.

Such catalysts, which structure bases on short peptides (proteins of reduced size) are broadly termed “*artzymes*”. They are constructed in such a manner that part of the peptide guarantees specific sarchitecture fo the catalyst, while second part is responsible for enzyme-like activity. This approach has been successful in many cases.

Chemistryu nows many reactions, which are not catalyzed by enzymes and for which specific chemical catalysts, have been found. This project is focused on synthesis of such catalysts, which might be called hybrid ones. They are composed of pepetidyl fragment responsible for proper three-dimensional structure of the catalyst and the fragment ensuring chemical catalysis. Thus, the goal of the project is to obtain mini-proteins able to catalyse any chemical reactions. They could be called bioinspired ones.