

DESCRIPTION FOR THE GENERAL PUBLIC

Organometallic compounds are considered to be of particular relevance in the modern world. Scientific as well as industrial laboratories are relentless in the quest for new, selective and efficient synthetic protocols that lead to main group molecular scaffolds of unique properties and various applications. Organosilicon compounds (siloxanes, carbosilanes, silsesquioxanes and others) may be considered as particularly attractive representatives due to specific properties such as: hydrophobicity, stability in wide temperature range, chemical and biological inertness – all of which resulted in wide applicability of the abovementioned species in such domains as pharmacy, medicine, cosmetics, construction etc.)

Classic synthetic approaches of organometallic compounds usually necessitate utilization of unstable reagents and suffer from formation of highly reactive byproducts. Such encumbrance and very often inherent limitation of such methods does not render syntheses of functionalized hybrid materials any more facile. That is why catalytic methods have gained increased attention in terms of development of new synthetic routes, devoid of such drawbacks.

The project proposed is aimed at use of unsaturated silicon, germanium and boron compounds characterized by high durability and low toxicity in new cross-coupling reactions with compounds that exhibit H-X moiety (where X – heteroatom) in the presence of commercially available Lewis acids and received within the framework of the project Schiff-base complexes. The project involves the development of new, selective, extending under mild conditions catalytic methods for the synthesis of a wide variety of materials or precursors of hybrid materials with unique properties and precise structure excluding reactive by-products.