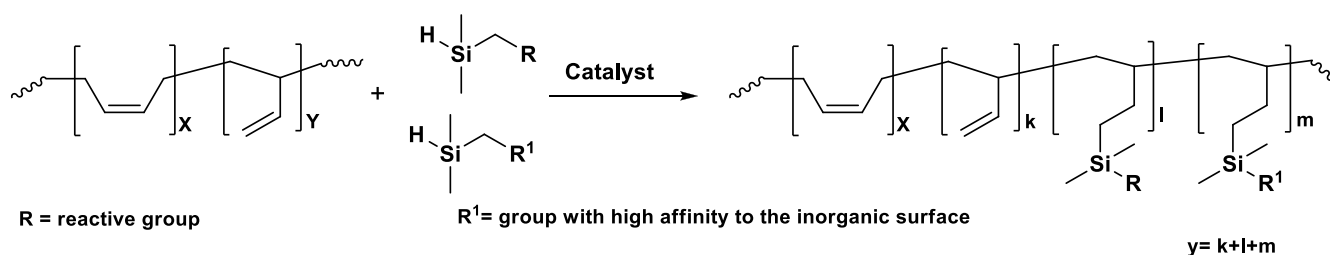


## Synthesis of new multifunctionalized butadiene based polymers

Polybutadienes are constantly a subject of interest of researchers. This is not only due to the widespread use of such polymers, but also the possibility of further modification in order to confer new desirable properties. According to available literature on butadiene polymers, various methods for preparing functionalized polymers by organic and catalytic reactions are described, however, the synthesis of multifunctional polybutadienes has not been described so far.

The purpose of the proposed project is to develop an efficient method for the synthesis of multifunctional polybutadienes and identification of its characteristics. The project is particularly directed towards the synthesis of new types of polymers which, in their structure, will include functional groups having different roles. The polymer will be subjected to modification via catalytic reaction (hydrosilylation) and the combinations of catalytic and organic reactions. Introduced groups will be responsible for the formation of a chemical bond to the surface of inorganic material (glass or metal or ceramic) and would enable further modification by co-polymerization or crosslinking. The synthesis of new modifiers (silanes, siloxanes), which will be used in the process of functionalization of polybutadiene, has also been planned. The selected multifunctionalized polymers will be used in crosslinking reactions and as modifiers for inorganic material surface. The impact of incorporated organosilicon moieties on the properties of the material will be analyzed and compared to the reference samples that do not contain described multifunctional organometallic moieties.



Developing a high yield and selective methodology for synthesis of multifunctionalized polybutadienes will be a breakthrough in polymer chemistry, and thus will be crucial in the synthesis and designing of new materials. The project fits in the ambitious challenges of catalysis and material chemistry (highly efficient and selective synthesis functional precursors for synthesis of new materials) and is expected to contribute to the knowledge of modern methods of chemical synthesis.