The research within this project is in the current of search for new active and selective metal-containing catalysts for aromatic hydrocarbons hydrogenation. Great interest in the catalysts of such a type results from their application potential in industry. They are applied in such important fields of technology as e.g. production of nylon fibers, hardening of fats, pharmaceutical industry, production of fine chemicals as well as in the reactions of hydro-desulphurization (HDS), hydro-denitrogenation (HDN), hydro-deoxygenation (HDO) and hydrogenation of carcinogenic aromatic compounds occurring in fuel.

Therefore the aim of the project titled: ***"Modification of amorphous silica with NH_4^+ agents to prepare an acidic support for iridium hydrogenation catalysts"*** is synthesis, characterization and application of iridium catalysts supported on new supports based on amorphous silica in the reaction of hydrogenation of aromatic hydrocarbons. The silicas modified with different NH_4^+ agents will be used as supports for iridium active phase. The modifications planned in the project are aimed to generate acidic properties of support so as to enhance catalytic activity of prepared catalysts in aromatic hydrocarbons hydrogenation reactions. The modifications will be conducted using ammonium salts solutions such as: ammonium chloride, ammonium fluoride, ammonium nitrate, ammonium carbonate and ammonium sulphate. The application of solutions with different molar concentrations allows to investigate the influence of the concentrations of modifying agents on acidic properties of silica.

The obtained silicas will be used as supports for iridium catalysts. The choice of iridium comes from its resistance to sulphur compounds, which is higher than the resistance of platinum. In addition its hydrogenation properties are not fully known. It induces to further research on hydrogenation reactions over iridium catalysts. Catalysts with different metal loadings will be prepared using different methods. The obtained catalysts will be characterized by advanced physico-chemical methods and tested in the reaction of hydrogenation of toluene.

The research on processes of hydrogenation of aromatic hydrocarbons over iridium catalysts supported on modified silicas has both cognitive and practical aspects. The obtained results will allow to enhance knowledge of hydrogenation properties of iridium. In addition the application of cheap and easy accessible supports with different acidity will have an impact on investigation of influence of acid-base properties of systems on catalytic activity for hydrogenation of aromatic hydrocarbons. It will result in the advance of knowledge in the field of heterogeneous catalysis.