Fuel cells are associated with modern technology and innovation. In fact, these devices have nearly 200 years of history. At the beginning of the study, it was discovered that electrochemical energy conversion is characterized by high energy efficiency. However, it was realized that the conversion process required the improvement of commonly used materials and technology. Hence, the attempt to develop fuel cells continues to this day.

The direct borohydride fuel cell seems to be an optimistic alternative to the existing and well-known fuel cells. Boron hydrides are attractive chemical compounds because they are chemically stable and not flammable. Furthermore, metal hydride compressors make it possible to replace the liquid or compressed hydrogen fuel tanks by a solid fuel tank.

The aim of the project is to determine the mechanism of the electrochemical energy conversion during the direct borohydride fuel cell operation. The simultaneous use of materials with physicochemical properties favoring hydrogen sorption processes with an effective inhibitor of fuel hydrolysis, will improve the DBFC work safety and will allow to obtain new, undiscovered anode materials with potentially better electrocatalytic properties.