



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 306277

European Research Council Starting Grant

SMaRT

Project title: **Shapeable Magnetolectronics in Research and Technology**

Principal Investigator: **Dr. Denys Makarov**

Hosting Institutions: **Leibniz-Institut fuer Festkoerper- und Werkstoffforschung Dresden e. V. / Helmholtz-Zentrum Dresden-Rossendorf e.V. Germany (from 01.10.2015)**

Project homepage: www.smartsensorics.eu

Starting date: **01.01.2013**

Duration (months): **60**

Summary

In our everyday life we are surrounded by sensing devices designed in a way to meet requirements of a certain application, which is determined primarily by their shape and size. What I propose here is to break this old vision in sensor engineering and to develop shapeable magnetolectronics allowing to reshape sensors upon demand after fabrication.

These devices are unique as the same initial sensor can be used for multiple purposes: an elastic magnetic sensor integrated in a fluidic tubing can be applied for therapeutic needs; namely, diagnostics of cancer diseases by examining magnetically tagged living cells. Alternatively the same sensor can be mounted on a curved surface of a stator in a tiny gap between rotor and stator in electrical machines to provide a regulation for the rotor position; these sensors can help to reduce energy consumption of electrical machines.

European added value/Sustainability: My group is the first which produced shapeable magnetic sensors and pointed out industrial applications of this technology. Supporting this initiative gives advantage to the EU in development of a unique class of devices with important functionality being not only flexible and fast, but also with the ability to react and respond to a magnetic field.

There are no alternatives for this technology; therefore as a long term perspective this project will provide a leading position to the EU in the field of shapeable (magnetic) sensorics. The project is in line with main initiatives of the EU: (i) reduction of energy consumption and (ii) development of novel concepts for disease diagnostics. The European principles of gender diversity management will be obeyed.