

Smart materials enable the implementation of prescribed and pre-programmed behaviors of structures. They can be controlled by the magnetic field, as magnetorheological elastomers, by underpressure, as granular structures, or realize contained in the material the change of properties in time, as mineral or magnetoreological gels. Used in engineering structures, they give them new properties and enable wider application. They can increase strength, reliability and safety of the structure, reduce wear and raise comfort. They can be used to construct lightweight durable structures (eg. mobile bridges), durable aerospace structures and wind turbines, strengthening old, historic buildings, or to protect sensitive objects (eg. historic buildings, monuments, concert halls) against para-seismic vibrations caused by passing rail vehicles.

The project will enable to develop a strategy of semi-active control of properties of structural elements, followed by transferring of these strategies on the properties of smart materials.