Ferromagnets (FM) are materials that exhibit spontaneous magnetization due to the fact that magnetic moments of the atoms are parallel to each other. In contrast in the antiferromagnetic (AF) materials the moments of neighboring atoms are antiparallel and cancel each other, therefore antiferromagnets does not display magnetization. The mechanism that is responsible for the ordering of atomic moments in both ferro- and antiferromagnets is known as the exchange interaction. Usually, with increasing temperature both ferromagnetic and antiferromagnetic ordering get weaker and finally disappear above the critical temperature namely: Curie temperature and Neel temperature for the ferromagnets and antiferromagnets respectively. At 1938, for equi-atomic FeRh alloy with cesium-chloride structure, intriguing transformation of magnetic properties was observed that consists in appearance of ferromagnetism and simultaneous disappearance of antiferromagnetism with increasing temperature. The FeRh alloy undergoes a transition from the antiferromagnetic state to ferromagnetic state (AFM›FM transition) at the temperature of about 370K, which apparently is opposite tendency to a common weakening of ferromagnetism with increasing temperature. The goal of the project is to utilize transformation of magnetic properties accompanying AFM›FM transition characteristic for FeRh alloy films in tailoring of magnetic properties of thin ferromagnetic films that are in a direct contact with FeRh system. The transfer of changes of magnetic properties accompanying AFM›FM transition in FeRh layers to the neighboring FM films is provided by the exchange interaction existing at the interface. Such “glued” together layers of ferromagnetic material and FeRh alloy can be obtained by their subsequent deposition onto the appropriate substrate. Resulting bi-layer FM/FeRh system will display a strong changes of magnetic properties occurring with increasing temperature, originating from the AFM›FM transition in FeRh sublayer. Hence the new magnetic properties of this artificial FM/FeRh system can be expected with respect to magnetic properties of ferromagnets and FeRh alloy alone, being tunable by variation of temperature. The concept of bilayer FM/FeRh with tunable magnetic properties will be further developed by implementation of FM/FeRh bilayers into a more complex multilayer systems. The manipulation with the magnetic state of FM/FeRh system embedded in such multilayers will allow for the control of magnetic state of the whole multilayer and also its electrical resistance in a similar way as it happens in sandwiches exhibiting famous giant or tunneling magnetoresistance phenomena.