Implementation of hybrid Al/EuS heterostructures in the superconducting tunnelling devices

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Interfacing thin metallic films with magnetic insulators leads to modification of its electronics structure due to exchange interaction of the conduction band electrons with magnetic ions. Depending on the metal it gives rise to reach variety of phenomena like non-reciprocal transport properties [1,2], cryogenic thermoelectric effect [1,3] or spin hall effect [4,5]. This talk is aimed to present recent results of implementation of the Al/EuS - based superconducting tunnelling junctions (see Fig 1), which display superconducting tunnelling diode effect and cryogenic thermoelectric effect [1-3]. The emphasis will be put on the properties of the Al/EuS interface and on the effect that magnetic properties of thin EuS films have on the exchange interactions on the interface [4,5].

Figures

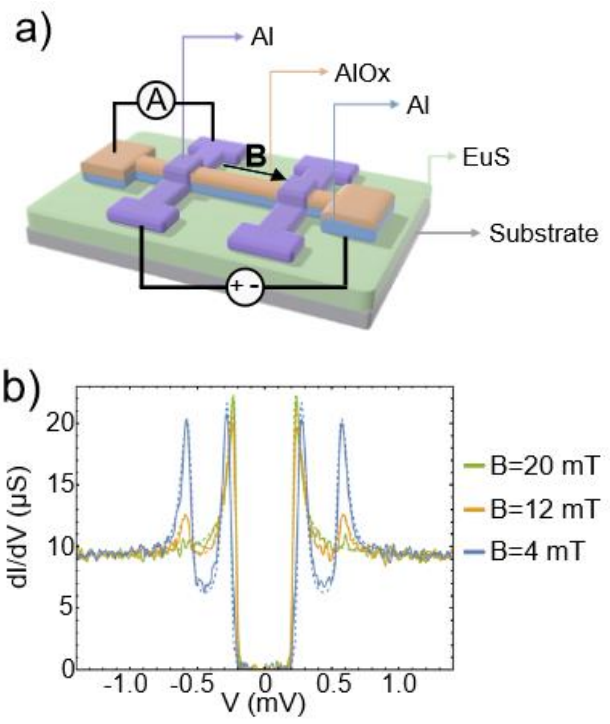

Figure 1: Schematic representation of the Al/EuS-based tunnelling junctions (a). Tunnelling spectroscopy measurements that show spin-split states in the Al/EuS heterostructures (b)

References

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