

Towards hybrid single-nanoparticle organic-molecule spin polarized electronic devices

Initiative: zukunft.niedersachsen (nur ausgewählte Ausschreibungen)

Ausschreibung: Forschungsk Kooperation Niedersachsen - Israel

Bewilligung: 13.01.2016

Laufzeit:

With the increasing demand for miniaturization, nano-structures are likely to become the primary components of future integrated circuits. Different approaches are being pursued towards achieving efficient nano-electronics, among which are spin-based electronic devices (spintronics). Moreover, the application of spintronics, which uses in classical picture the angular momentum of the electrons rather than the charge degree of freedom for reading and writing information, should result in reducing the power consumption of electronic devices. In this context a new promising and effective approach for spintronics has emerged using spin selectivity in electron transport through chiral molecules, named Chiral Induced Spin Selectivity (CISS). The collaboration within this project involves groups from Germany and Israel having a well-balanced combination of overlapping and complementary expertise in the necessary fields of materials preparation, characterization and measurement techniques. This collaboration will open a way for realizing nanometric hybrid single-dot organic-molecule spin polarized spintronics at ambient temperatures.

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