SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA

Uprzejmie zawiadamiamy, że w **środę**

19 maja 2021 r., o godz.10:00

odbędzie się seminarium **on-line (link podany jest na stronie IF PAN)**,

na którym

Prof. dr hab. Tomasz Stobiecki

(AGH University of Science and Technology, Institute of Electronics)

wygłosi referat na temat:

"Current induced magnetization switching (CIMS): Spin Transfer Torque (STT) and Spin-Orbit Torque and their applications in MRAM technology"

In my lecture, I will present our latest results on current induced magnetization switching (CIMS) in nano- and microsized devices intended for spintronics applications. The STT multi-level magnetization switching will be demonstrated on the example of series connected MTJ cells of the magnetic tunnel junction with the MgO barrier. The possibility of using the MTJ cell network for neuromorphic calculations will be discussed [1].

The magnetization dynamics in (W,Pt)/CoFeB and W/CoFeB/Pt multilayers will be demonstrated using SOT-FMR technique. The analysis results in a determination the spin Hall angle of W and Pt layers [2,3]. Also, I will show in heavy metal/ferromagnet/antiferromagnet: Pt/Co/NiO and W/Co/NiO perpendicular magnetized system deterministic Co magnetization switching without an external magnetic field, which is replaced by an in-plane exchange-bias field.

Based on the literature data, I will discuss new achievements on designing the STT/SOT-MRAM.

[1] P. Rzeszut, W. Skowroński, T. Stobiecki, et al., Multi-bit MRAM storage cells utilizing serially connected perpendicular magnetic tunel junctions, J. Appl. Phys. 125, 223907 (2019)
[2] W. Skowroński, Ł. Karwacki, T. Stobiecki, et al., Determination of Spin Hall Angle in Heavy-Metal/Co-Fe-B-Based Heterostructures with Interfacial Spin-Orbit Fields, Phys. Rev. Appl. 11, 024039 (2019)
[3] S. Łazarski, W. Skowroński, T. Stobiecki, et al., Field-Free Spin-Orbit-Torque Switching in Co/Pt/Co Multilayer with Mixed Magnetic Anisotropies, Phys. Rev. Appl. 12, 014006 (2019); K. Grochot, Ł. Karwacki, T. Stobiecki, et al., Current-Induced Magnetization Switching of Exchange-Biased NiO Heterostructures Characterized by Spin-Orbit Torque, Phys. Rev. Appl. 15, 014017 (2021)

Serdecznie zapraszamy

Roman Puźniak
Andrzej Szewczyk
Henryk Szymczak