

CuPt/Co 系における巨大スピントルク効率

Giant spin torque efficiency in CuPt/Co system

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Recently, Spin Hall effect (SHE) in highly conductive material has attracted much attention because the crossover between intrinsic SHE and extrinsic SHE was observed in highly conductive regime of Pt [1]. In order to realize low power consumption logic device, it is crucial to explore new material showing noble spin properties such as CuPt alloy, whose resistivity can be tuned by its crystallinity.

Here, we investigated a spin torque efficiency in different ordered CuPt alloy by means of spin-torque ferromagnetic resonance (ST-FMR). We changed the crystallinity of CuPt accordingly via annealing and different substrates. Surprisingly, we found the estimated spin torque efficiency is fairly larger than that in CuPt/Py system [2], especially Si substrate /CuPt(3.5-10nm)/Co(10nm)/AlO_x(2nm) case as shown in Fig. 1, implying that this efficiency is originated from an interface property such as spin mixing conductance.

In this conference, we discuss the origin of the higher efficiency by investigating CuPt and Co thickness dependences systematically. Our discovery showed new path towards enhancing magnitude of spin orbit torques, and shed a light on the realization of new-generation spintronics device.

[1]E. Sagasta, *et al.*, Phys. Rev. B **94**,060412(R) (2016).

[2]R. Ramaswamy, *et al.*, Phys. Rev. Applied **8**, 024034 (2017)

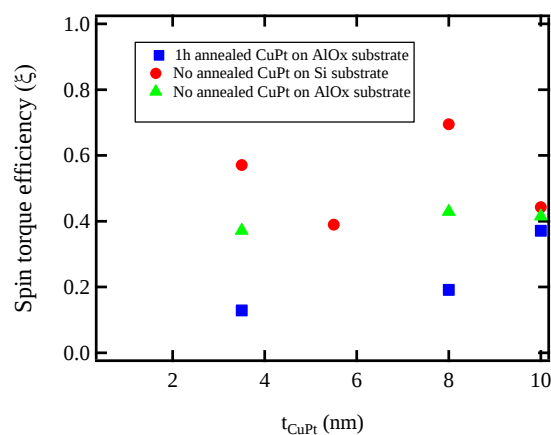


Fig.1 The relationships between Spin torque efficiency and CuPt thickness