日本金属学会　東海支部行事

金属材料談話会

日本金属学会東海支部・日本鉄鋼協会東海支部

ドイツ・ヨハネスグーテンベルク大学マインツの**Mathias Kläui**教授が名古屋に来訪されます。この機会に、下記の講演会を企画しましたので、奮ってご聴講下さいますようご案内申し上げます（聴講無料）。

演題： **Spin-orbit induced topological magnetization dynamics for Green IT**
（グリーンITに向けたスピン-軌道相互作用誘起トポロジカル磁化ダイナミクス）

講師： **Prof. Mathias Kläui**
（Johannes Gutenberg-Universität Mainz、東北大学金属材料研究所客員教授）

日時：平成２８年１１月２４日(木)　１３：３０～１５：００

場所：名古屋大学工学部５号館　３　階　５２１講義室

名古屋大学東山キャンパスマップ：http://www.nagoya-u.ac.jp/access-map/index.html

概要：In our information-everywhere society IT is a major player for energy consumption and novel spintronic devices can play a role in the quest for GreenIT. Reducing power consumption of mobile devices by replacing volatile memory by fast non-volatile spintronic memory could also improve speed and a one-memory-fits-all approach drastically simplifies the microelectronic architecture design. Novel low power storage-class memory devices have been proposed, where switching by alternative means, such as spin-polarized currents is used. For this we develop new highly spin-polarized materials and characterize the spin transport using THz spectroscopy.

Topological spin structures that emerge due to the Dzyaloshinskii-Moriya interaction (DMI), such as chiral domain walls and skyrmions possess a high stability and are of key importance for magnetic memories and logic devices. We have investigated in detail the dynamics of topological spin structures, such as chiral domain walls that we can move synchronously with field pulses.

For current-induced dynamics we find in addition to spin transfer torques that spin-orbit torques dominate the dynamics. We determine these independently of the DMI and we find that the sign of the DMI is opposite for stacks with CoFeB compared to stacks with a CoFe as the magnetic layer due to B diffusion at the interface.

For strong DMI novel topologically stabilized skyrmion spin structure emerge and we demonstrate for the first time that we can move a train of skyrmions in a “racetrack”-type device due to spin-orbit torques reliably and determine the dynamics that is governed by the topologyand we also find skyrmion lattices at room temperature in confined geometries.

Finally, we study thermal heat currents as a source of spin currents and find a strong dependence of the measured signal on both the bulk and the interface.

【交通】 名古屋駅より地下鉄東山線本山駅で名城線に乗換え、名古屋大駅下車徒歩5分

【問合先】

464-8603　名古屋市千種区不老町　名古屋大学工学研究科材料系教室内
日本金属学会・日本鉄鋼協会東海支部（e-mail: tokai@numse.nagoya-u.ac.jp)
本件担当：浅野秀文　（e-mail: asano@numse.nagoya-u.ac.jp)
TEL: 052-789-3568, FAX: 052-789-3237