【MDプログラム H28 Spring Semester QE1】

日時 Date and Time: 9月20日（火） Tue. September 20 13:00-14:30

場所 Place: MD講義室MD Lecture Room

Time	学生 Examinee		所属専攻 Department	指導教員 Academic Advisor	テーマ名 Subject of Study	テーマの領域 Area of Study	テーマ説明 Outline
13:00- 13:30	Nguyen Tuan Hung	M2	理学 物理学専攻 Graduate school of Science Department of Physics	齋藤理一郎 教授 Prof. Riichiro Saito	Thermoelectric properties of low-dimensional semiconductors	物性理論	In this thesis, we discuss the interplay between the confinement length L and the thermal de Broglie wavelength Λ to optimize the thermoelectric power factor (PF) in low-dimensional semiconductor. An analytical formula for the PF is derived to describe quantum effects on the PF of the low-dimensional semiconductors. We find that the PF is enhanced for one- and two-dimensional semiconductors when L is smaller than Λ. This thesis also presents a possibility of one-dimensional semiconducting carbon nanotubes as a good candidate of thermoelectric materials. Carbon nanotubes are selected in this thesis due to a lot of variety of their geometrical structure which allows us to find desired physical properties.
13:30- 14:00	瞿 李元 QU, Liyuan	M2	理学 化学専攻 Graduate school of Science Department of Chemistry	山下正廣 教授 Prof. Masahiro Yamashita	Electrochemical Syntheses of Naphthalenediimide-Based Conductive Porous Coordination Polymers	錯体化学	Five NDI-based PCPs were synthesized by electrochemical reduction and their structures were confirmed by single-crystal X-ray structure determination. Two of them are relatively stable in air, and they are semiconductors with relatively high electrical conductivities (10^{-4}–10^{-2} S cm^{-1}).
14:00- 14:30	孫 銘嶺 SUN, Mingling	M2	工学 知能デバイス材料学専攻 Graduate school of Engineering Department of Materials Science	高梨弘毅 教授 Prof. Koki Takanashi	$Co_2Fe_{0.4}Mn_{0.6}Si$ホイスラー合金薄膜の垂直磁気異方性とMgO障壁層を用いた接合におけるトンネル磁気抵抗効果	スピントロニクス	The magnetic properties of $Co_2Fe_{0.4}Mn_{0.6}Si$ ultra-thin films and the tunnel magnetoresistance effects of $Co_2Fe_{0.4}Mn_{0.6}Si$/MgO/$Co_{50}Fe_{50}$ MTJs were investigated. The suppression of interdiffusion and the enhancement of perpendicular magnetic anisotropy using proper underlayers are the key points for the development of $Co_2Fe_{0.4}Mn_{0.6}Si$ films applying to STT-MRAM devices.