

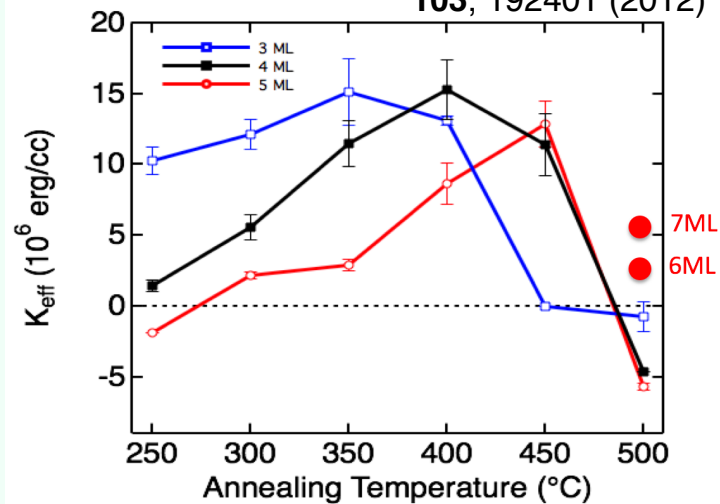
強磁性金属/酸化物積層構造における垂直磁気異方性とその電界制御

物質・材料研究機構 三谷誠司

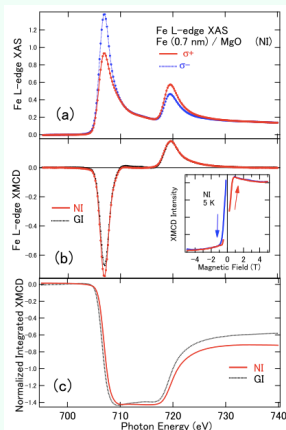
Cr/Fe/MgO積層構造の 巨大な界面垂直磁気異方性

磁化測定

Koo et al., Appl. Phys. Lett. **103**, 192401 (2012)



XMCD

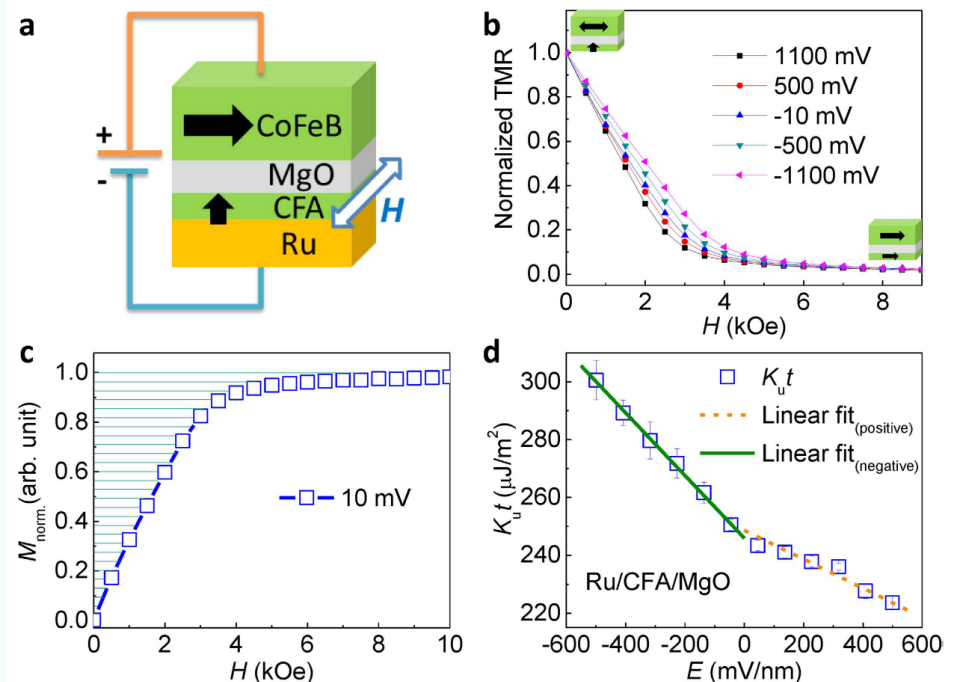


Annealing temperature	300 °C		450 °C	
	$m^{\perp} [\mu_B]$	$m^{\parallel} [\mu_B]$	$m^{\perp} [\mu_B]$	$m^{\parallel} [\mu_B]$
$m_{\text{spin}} [\mu_B]$...	2.07	...	2.08
$m_{\text{orb}} [\mu_B]$	0.24	0.19	0.30	0.21
$K_i^{\text{XMCD}} (K^{\text{XMCD}})$	0.86 mJ/m ² (77 $\mu\text{eV}/\text{Fe}$)		1.48 mJ/m ² (132 $\mu\text{eV}/\text{Fe}$)	
K_i^{VSM}	1.19 mJ/m ²		2.01 mJ/m ²	

Okabayashi et al., Appl. Phys. Lett. **105**, 122408 (2014)

Ru/Co₂FeAl/MgO積層構造 の垂直磁気異方性と電界制御

90°磁化配置のトンネル接合における
磁気異方性に及ぼす電圧の効果測定



Wen et al., Appl. Phys. Lett. **98**, 242507 (2011)

Wen et al., Adv. Mater. **26**, 6483 (2014)

Wen et al. Sci. Rep. **7**, 45026 (2017)