公益社団法人 応用物理学会
北海道支部　会員各位

平成28年6月15日

応用物理学会北海道支部

講演会のお知らせ

下記講演会を開催いたしますので、多数ご参加下さいますようご案内申し上げます。

演題：Topotactic phase transformation in SrFeOx epitaxial thin films
講師：Woo Seok Choi 氏
（Department of Physics, Sungkyunkwan University・Assistant Professor）
日時：平成28年7月1日（金）　14：00～15：00
場所：北海道大学電子科学研究所１階　セミナー室１－３
共催：応用物理学会北海道支部　（共催団体：北海道大学電子科学研究所）

講演の要旨
Topotactic phase transformation is a prominent platform for studying phase transition, redox activity, and ionic transport in a solid. In particular, for transition metal oxide thin films, the spontaneous oxygen vacancy ordering results in emergent physical ground states that can be tuned by crystal field energy and epitaxial strain. Designing and controlling such parameters might lead to novel opto-electronic and energy device concept. In this presentation, we report topotactic phase transformation in SrFeOx (SFO) epitaxial thin films grown by Pulsed Laser Epitaxy (PLE). Multivalent SFO show rich x-dependent magnetic and electronic ground state, ranging from antiferromagnetic insulator (x = 2.5) to ferromagnetic metal (x = 3.0). The valence state of Fe changes from 3+ to 4+ when x changes from 2.5 to 3.0, and determines the material's physical and chemical properties. Eventually, a phase transition in electromagnetic phase, as well as in structural phase, is observed
by changing x. Using real-time spectroscopic ellipsometry, we observe the x-dependent evolution of the phases in epitaxial SFO thin films. The topotactic phase transition　illustrates strong correlation among defect concentration, atomic and electronic structure, and functional properties such as oxygen ionic transport and hydrogen storage capacity in complex oxide thin films.

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