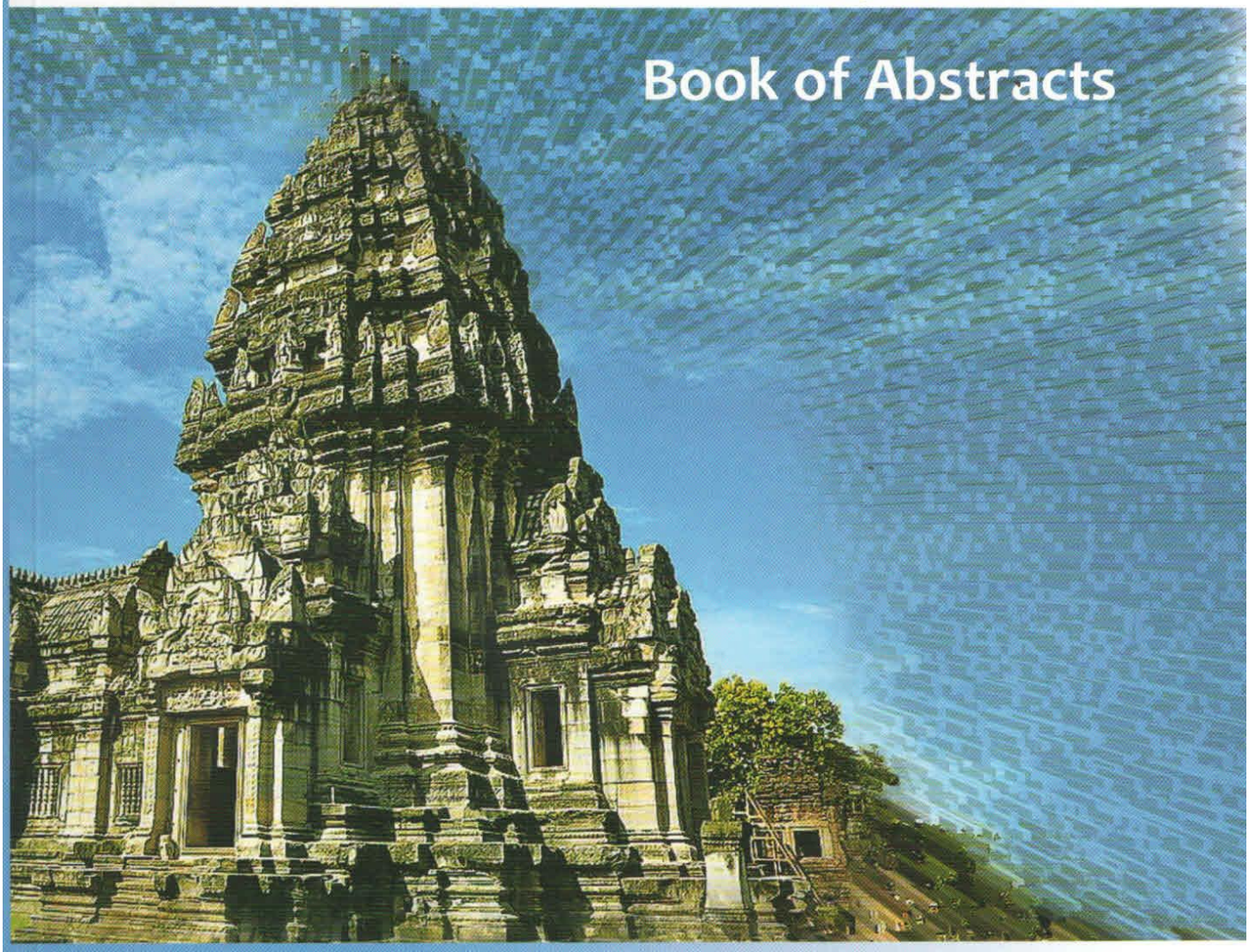
ACCMS-7

The 7th Conference of the Asian Consortium on Computational Materials Science (ACCMS-7)

Suranaree University of Technology
23-28 July 2013 · Nakhon Ratchasima · Thailand
http://accms7.sut.ac.th



Book of Abstracts

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described in this paper. The change in pressure from 2 to 40 mbar and the graphene transferring onto glass and SiO2/Si via $Fe(NO_3)_3$ etching are confirmed by using Raman spectroscopy, optical microscopy and atomic force microscopy (AFM). The electrical and optical properties of graphene are measured by UV-Vis spectrophotometer and four-point probe measurement. The changed in pressure result to the I_D/I_G of graphene is gradually reduced while the I_{2D}/I_G is increased when we decreased the pressure, suggesting the high quality graphene. However, the result of process transfer indicates that the I_D/I_G is gradually increased which lead to the important factor effect for a quality graphene.

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Poster **P2-42**

Thermal Distribution and Magnetic Stability Relation in Ferromagnetic Ising Thin Films : Monte Carlo and Finite Element Analysis

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Ferromagnetic thin films have been considered as promising recording media in data storage devices. This is as their transition of magnetization direction can be suitably referred to digital binary state. In addition, with the current advances in enhancing memory capacity of the device by reducing magnetic grain size, which in turn increases recording areal density. However, the energy barrier separating the magnetization directions also reduces with the grain-size reduction especially when approaching nano-scale. Therefore, the developed ferromagnetic materials have been narrowed down to those with very high coercive field. So, the magnetic media needs very high external magnetic field in the reversal of magnetization direction. To overcome this problem, one may use heat-assisted magnetic recording technology to assist the writing procedure. However, the thermal distribution from the heat adsorbed depends strongly on the thin film structure, which affects the stability of magnetization. Consequently, this study used computer simulation to investigate the dynamic behavior of the magnetization during heat supplying onto the ferromagnetic thin films. In this work, the Ising model was considered due to the fact that the thin films system has dipolar strong magnetic crystalline anisotropy. Then, the temperature distribution in the magnetic films was calculated using the Finite Element method. After that, the Monte Carlo method was used to simulate the spin system and extract the magnetization to address the effect of thermal distribution on the magnetic profiles. Preliminary results show that the minimum of the magnetization is power-law proportional to the amount of absorbed heat. On the contrary, the minimum magnetization reduces with increasing the films thickness. In addition, the dynamic penetration-depth profiles of the temperature depends greatly on films thickness. Therefore, the outcome of this work functions as a guideline of how to control amount and duration of heat supplying while preserving the magnetic stability.

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Poster **P2-43**

Existence of Surface Waves at the Plane Boundary of Antiferromagnetic Cr_2O_3

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Surface waves of different nature are important for development of different facilities and devices. In present study conditions for the existence of surface waves propagating along the plane boundary of antiferromagnetic Cr_2O_3 are obtained using analytical matriciant method. It is found that antiferromagnetic magnetoelectric effect takes place, i.e. electric field creates the magnetization and magnetic field creates the electric polarization. Further investigation of the magnetoelectric effect is subject of interest because of its manifestation in graphen sheets.

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