

ASPIRE League Research Grant 2014 (Type2) Project

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	Position	Professor
Co-researchers	HKUST	—
	KAIST	—
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	Tsinghua	Zhengjun ZHANG, Professor, Dean of School of Materials Science and Engineering
Subject of the research project	Development of Highly Functional Nanohetero-Structures for Next Generation Devices	
Summary of the research project	<p>Nanohetero-structures incorporate two or more components of different natures, such as metals (conductors), ceramics (insulators), and semiconductors. Some of them have already been practically applied in devices, which is generally accompanied by an outstanding innovation of the devices. For example, magnetic nanohetero-structures have found application in the field of magnetic recording, as we know magnetic tunnel junctions (MTJ) have been used in the read head of hard disc drives (HDDs) and in the magnetoresistive random access memory (MRAM). During recent years, varieties of nanohaetero-structures have been proposed and fabricated, many interesting interactions and couplings between the components have been disclosed. These make nanohetero-structures even more promising.</p> <p>The research for the first year (2014) of this project will be focused on the fabrication of nanohetero-structures between ferromagnetic metals and multiferroic (antiferromagnetic, ferroelectric) compounds.</p> <p>In this project, the three groups at Tokyo Tech, Tsinghua</p>	

Summary of the research project	<p>University and Nanyang Technological University, respectively, will jointly devote their efforts to develop new nanohetero-structures. In particular, they will encourage the students in the three groups to design and fabricate new nanohetero-structures. The researchers and students will work independently in their own groups, but will meet regularly to exchange ideas, share progress of experiments, etc. A satellite laboratory will be established at Tokyo Tech for the visiting researchers and students from the other two universities to conduct their experiments. Another purpose of this satellite laboratory is to provide an opportunity for the students from the three universities to work cooperatively on a common subject for a certain period.</p>
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