



## Invited speaker's information form of IUMRS-ICA2017

### Presentation on Symposium of “**smart materials (D7)**”



**Presentation title: Flexible Pb(Zr,Ti)O<sub>3</sub> film based mechanical and thermal energy harvesting under harsh environments**

**Speaker's name and affiliation:**  
**Jong Hoon Jung**  
**Department of Physics**  
**Inha University**

**City/ Country: Incheon/Republic of Korea**

**Email: [jhjung@inha.ac.kr](mailto:jhjung@inha.ac.kr)**

#### **Brief biography of Speaker:**

##### Education

1994. 02. Department of Physics Education, Seoul National University  
1996. 02. Department of Physics, Seoul National University  
2000. 08. Department of Physics, Seoul National University

##### Carrier

2002. 01. Post-Doc. Center for Strongly Correlated Electron System, Seoul National University  
2004. 02. Post-Doc. Spin Superstructure Project, ERATO, Japan Science and Technology  
2012. 02. Visiting Professor. Georgia Institute of Technology

#### **Abstract:**

The development of an effective energy harvesting system is an increasingly important issue because of the large consumption of energy in modern society. Nanogenerators (NGs), in particular, have demonstrated an effective conversion of typically wasted mechanical/thermal energies in our daily life into electricity. One of the key factors to increase the energy harvesting efficiency of NGs is to choose appropriate materials and develop innovative device structures.

In this talk, we report the development of an inorganic Pb(Zr,Ti)O<sub>3</sub> (PZT) film based mechanical energy harvesting devices. By adopting a newly developed flexible Ni-Cr metal foil substrate and a perovskite-structure-compatible LaNiO<sub>3</sub> (LNO) bottom electrode, we successfully grow a flexible PZT, films with a high remanent electric polarization, high piezoelectric coefficient, and high pyroelectric coefficient. In contrast to organic films, inorganic PZT films has shown the generation of electric power even in the harsh environments including high humidity, strong base environment, low and high temperatures. This work should expand the application of flexible PZT film-based NG for the scavenging mechanical vibration and thermal fluctuation energies even at extreme conditions.

Please fill the above form and send it to the Symposium organizer [rcwang@nuk.edu.tw](mailto:rcwang@nuk.edu.tw).