**Ultrastretchable, Soft and Shape Reconfigurable Electronics using Liquid Metals**

Sungjune Park

*Department of Polymer-Nano Science and Technology*

*Department of Nano Convergence Engineering*

*Jeonbuk National University, Jeonju 54896, Korea*

*\*E-mail: s.park@jbnu.ac.kr*

**Abstract**

Stretchable and soft electronics have received a great attention due to their potential applications in wearable electronics, soft robotics and electronic skin. The gallium-based liquid metals are an appealing conductor for soft and stretchable devices due to their metallic conductivity while they are strained. The liquid metals spontaneously form the thin oxide layer (~3 nm) upon exposure to the oxygen. This oxide layer allows the metal to adhere to various substrates and to stabilize the shape in the air. Thus, the liquid metal can be patterned into the desired geometries by capillary injection, printing, molding and forced wetting. By utilizing elastic substrates patterned with the liquid metal, various applications such as stretchable shape memory polymers with electrical conductivity, thermo- and mechanochromic fibers, stretchable capacitive sensors, and energy harvesting devices have recently been demonstrated. These works would be further utilized for creating soft and stretchable electronics with desirable mechanical properties for human-machine interfacing, electronic skins, and wearable healthcare devices.