

## Fabrication of a Microfiber with Conducting Fillers Embedded in an Agarose Matrix as a Humidity Sensor

박예진, 이양우, 염봉준<sup>1</sup>, 구형준<sup>†</sup>

서울과학기술대학교; <sup>1</sup>한양대학교

(hjkoo@seoultech.ac.kr<sup>†</sup>)

A fiber-shaped sensor could be attractive, especially for wearable electronics. Here, we present flexible and conductive microfibers fabricated by simple extrusion of dispersed solution with graphene oxide, silver nanowire, and agarose polymer. After extrusion and drying processes, the microfibers are chemically reduced by hydrazine vapor for reduction of the graphene oxide filler. The effect of 1-D and 2-D nanofillers and their compositions on enhancement of the conductivity and mechanical property of the microfibers was investigated. By using both fillers together, we obtained the drastic improvement in conductivity of the microfibers up to 0.034 S/m without thermal treatment. Due to the enhanced conductivity of the microfibers and the catalytic ionization of water vapour by the fillers, the microfiber exhibits the fast and reversible change of electrical resistance to humidity change.