

Highly stretchable and transparent conducting electrode using Silver nanowires
polydimethylsiloxane(PDMS) electrode

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Lately, transparent conducting electrodes(TCE) for flexible and stretchable device have been of great interest. The indium tin oxide(ITO) has been used widely for transparent electrode. However, it has limit to apply to flexible and stretchable device due to its brittleness. So, new TCE materials with stretchability, low resistance and should be developed for flexible and stretchable devices. Particularly, compared with other materials, silver nanowires(AgNWs) have been considered as a promising candidate for new TCE, because they have high electrical conductivity, ductility and solution processability. One of key technologies for AgNW TCE is relies on the synthesis of AgNW with high aspect ratio (>1000). Here, we tried to synthesize AgNWs with high aspect ratio via selective seed etching and selective cap the certain facet by adjusting additives. As a result, It could be improve the problem of the penetration ratio and conductivity. We fabricated PDMS/AgNW based TCE with well-stretchability and similar transparency and resistance to ITO. In spite of crumpling and folding, its resistance was almost unchanged value.