

High-yield synthesis of silver nanowires with high aspect ratio via selective nucleation and growth reaction

한혜지, 임상혁†

경희대학교 결정기능화공정센터(FCC)

(imromy@khu.ac.kr†)

Recently, one-dimensional metallic nanostructures including Ag nanowires (Ag NWs) have attracted a great deal of attention because of their prominent optical, electrical, and thermal properties. As the market gradually requires the large and flexible displays, the conventional inorganic transparent conducting oxide (TCO) such as indium thin oxide (ITO) becomes not to satisfy the specification of low resistance, high transmittance, flexibility, and low cost. Therefore, needs for alternative technologies such as graphene, carbon nanotube, TCO sols, conducting polymers, and metal nanowires are created to solve the problems. Among them, metal meshes or metal nanowires seem to be good candidate to satisfy above specifications because the metals are inherently conductive and ductile, and can be drawn the patterns by modifying conventional TCO patterning equipment. Especially, the Ag NWs are of great interest because the flexible transparent electrode for large touch screens can be fabricated by cheap solution coatings. Here, we tried to synthesize Ag NWs with high aspect ratio via selective crystal nucleation and crystal growth reaction by controlling additives which can selective cap the certain facet of Ag nanocrystals.