Development of manufacturing process for flexible and highly conductive electrodes using cryogenic interfacial polymerization

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This study relates to the synthesis of a metallic conductive polymer electrode that can stably realize electrical conductivity of 1000 S/cm or more. Polyaniline nanostructures with improved aspect ratio and charge transport ability were obtained by controlling the polymerization temperature and polymerization time used in the cryogenic interfacial polymerization method, and by increasing the polymerization time. When the synthesized polyaniline was subjected to secondary doping under optimized conditions, electrical conductivity of 1379 S/cm was realized. In addition, when the secondary doped polyaniline was laminated on the graphene paper, it was possible to realize additional electrical conductivity improvement of 2000 S/cm or more.