Proanthocyanidin-Enhanced Wettability and Adhesion in Liquid Metal Inks for Multi-Substrate Patterning in Soft Electronics

Haoran Liu[1], Yidong Peng[1], Jiahui Sun[1], Yuxi Zhang[1], Jiayan Long[1], Yanqing Gu[2], Steve Park[3], Tianxi Liu[1], Jiancheng Dong[1,*], Yunpeng Huang[1,4,*]

[1] Key Laboratory of Synthetic and Biological Colloids, Ministry of Education, School of Chemical and Material Engineering, Jiangnan University, Wuxi, 214122, China

[2] Department of Orthopedics, Nanjing First Hospital, Nanjing Medical University, Nanjing, Jiangsu, China

[3] Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), 291 Daehak-ro, Yuseong-gu, Daejeon, 34141, Republic of Korea

[4] State Key Laboratory of Organic-Inorganic Composites, Beijing University of Chemical Technology, Beijing 10029

* Corresponding authors

E-mail: jesse_D@outlook.com (J. C. Dong), hypjnu@jiangnan.edu.cn (Y. P. Huang)

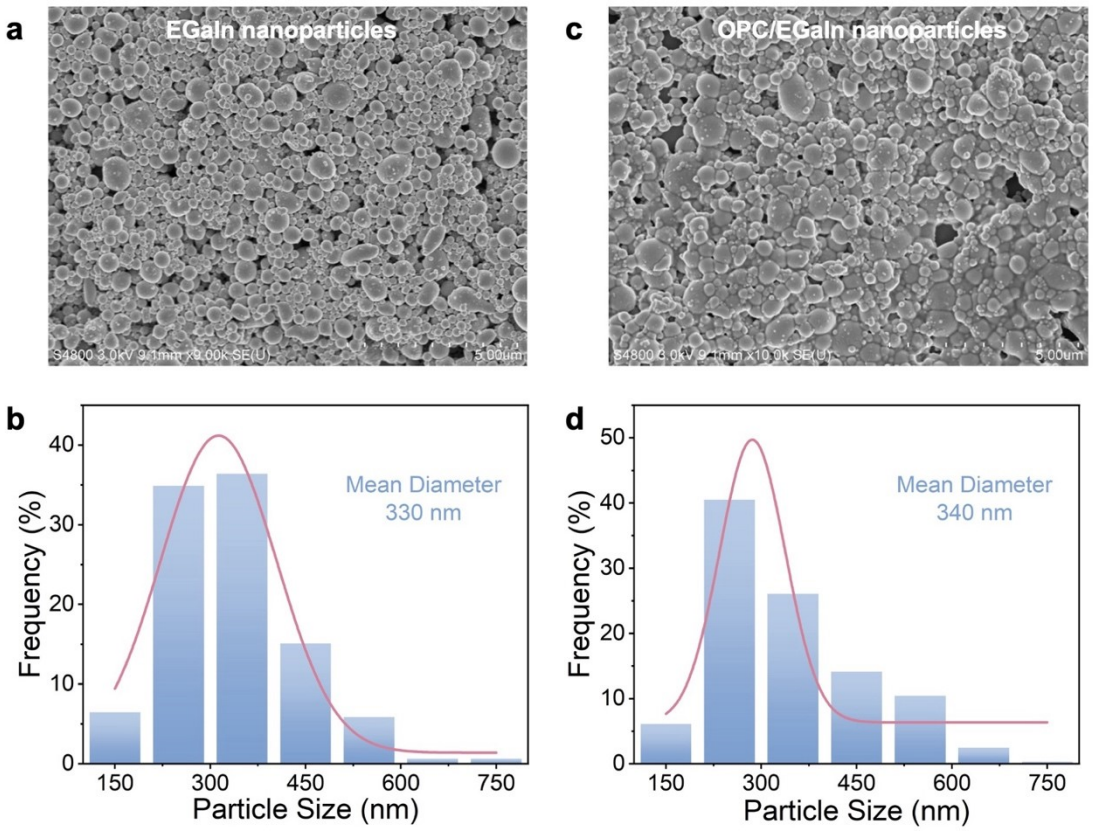

Figure S1. SEM images and corresponding particle size distribution of a, b) EGaln nanoparticles, and c, d) OPC/EGaln nanoparticles.

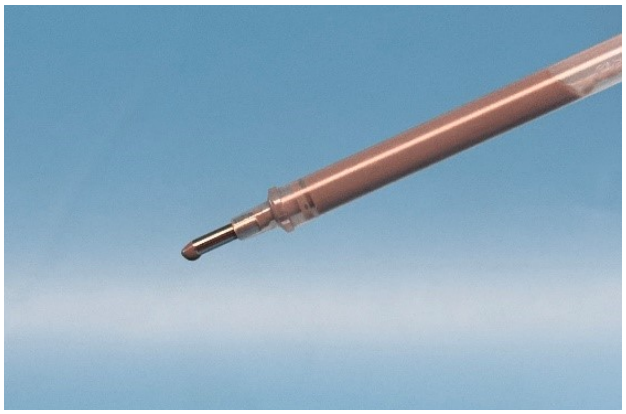

Figure S2. Digital photo showing the leakage of EGaln nanoparticle inks in a ballpoint pen tube.

Figure S3. Digital photo of a ballpoint pen filled with OPC/EGaIn NPs inks.

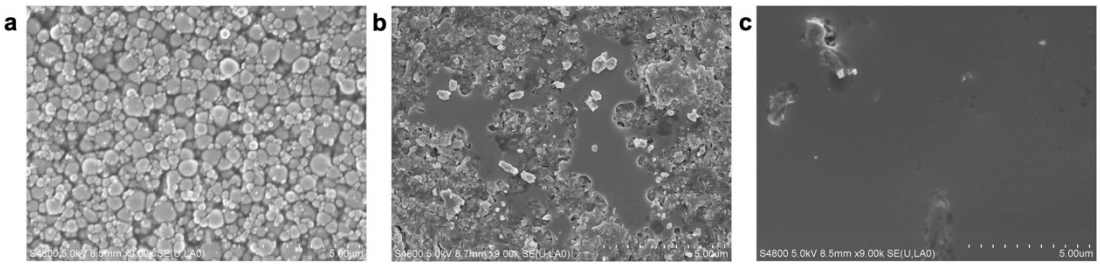

Figure S4. SEM images showing the activation process of the OPC/EGaIn NPs inks via the roller extrusion a) initial state, b) break and gradually fusing, c) conducting state.

Figure S5. Digital photo showing the handwriting traces after activation.

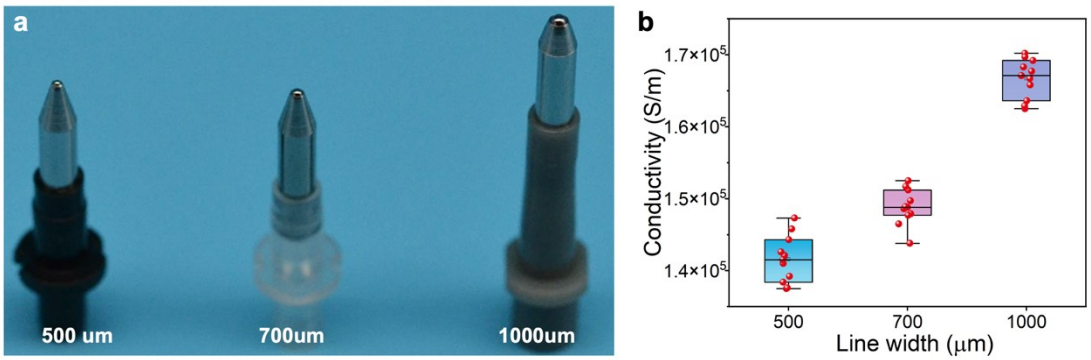

Figure S6. a) Digital photos of ballpoint pens with different diameters, and b) the electrical conductivity of handwritten inks corresponding to different line widths.

Figure S7. SEM image of OPC/EGaIn NPs ink printed SEBS membrane.

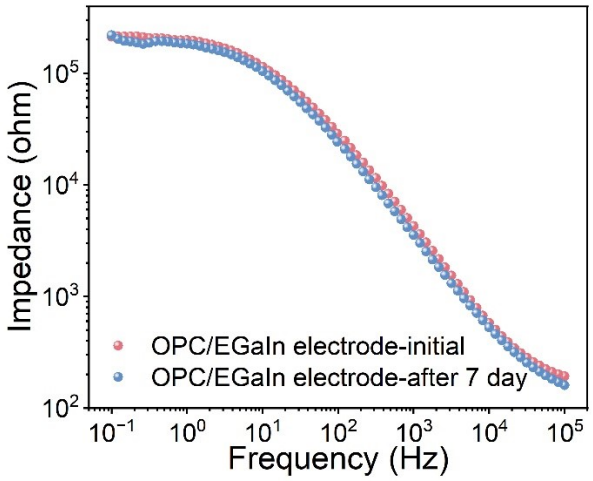

Figure S8. On-skin impedance of OPC/EGaIn bioelectrode after 7 days.

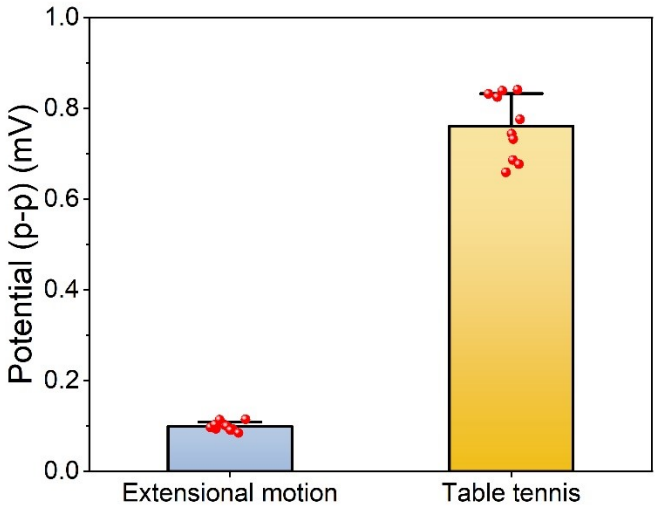

Figure S9. The potential of sEMG signals collected from different sports.