

Hybrid material composed of graphene oxide-MoS₂ nanoparticle for bioelectrochemical sensor

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In this study, hybrid material constituted of graphene oxide (GO) and molybdenum disulfide nanoparticles (MoS₂ NPs) is fabricated as an electrode for redox signal improvement of biosensor. To fabricate hybrid material (GO-MoS₂), MoS₂ NPs were encapsulated with GO by electrostatic bond. To investigate redox signal improvement and stability of biosensor, myoglobin (Mb), a metalloprotein with an iron metal ion in its core, is used as a sensing molecule. The synthesis of GO-MoS₂ is confirmed by electron microscopy and X-ray diffraction. Immobilization of Mb on GO-MoS₂ electrode is verified by atomic force microscopy. Electrochemical properties of fabricated samples are investigated by cyclic voltammetry. From the results, the proposed hybrid material composed of GO-MoS₂ can be applied as an electrode for biosensor development with redox signal improvement and maintenance. Acknowledgments: This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2016R1A6A1A03012845).

Reference

[1] Choi et al., Biosens. Bioelectron., 47, 358 (2013).