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Formation of Lipid Bilayer Membrane including Ion Channels on Graphene JUNG YOON CHOI, KYUNG EUN BYUN, SEON NAMGUNG, Seoul National University, HEEJUN YANG, JINSEONG HEO, HYUN-JONG CHUNG, SUNAE SEO, Samsung Advanced Institute of Tech., SEUNGHUN HONG, Seoul National University — Lipid bilayer membrane on a solid electrode has been extensively utilized to study membrane proteins. Recently, graphene has drawn an attention as a transparent and high conductive electrode compatible with biological systems. Herein, we report the successful formation of lipid membrane including ion channels on graphene. In this method, graphene was functionalized by biocompatible molecular layers and utilized as a substrate to support lipid bilayer membrane including ion channels. The functionality of ion channels incorporated in the lipid bilayer membrane was studied via the electrochemical impedance spectroscopy. This lipid membrane-coated graphene structure can be a versatile platform for various applications such as bio-sensing and in vitro drug screening.

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