

Electrochemical energy conversion technologies such as fuel cell are promising to solve the energy problems in the future. In these technologies, the performance of electrocatalysts are so important. Commercial platinum catalysts have been used due to their high catalytic activity. However, their scarcity and poor durability hinder themselves from large scale commercialization and widely use. A lot of studies were executed for finding the alternative catalyst to replace Pt catalysts with more stable and cost-effective catalysts. In particular, single atom catalysts have been rapidly developed because of their unique characteristic and high catalytic activity. In this work, we developed sequential treatments of hydrothermal treatment with sulfuric acid, Co ion-exchange and coordination 2-methylimidazole to facilitate single cobalt atom highly dispersed graphene. ORR measurements were also conducted as one of the methods to evaluate electrocatalyst activity. The Co-N-C composite shows excellent catalytic activity, high durability and high methanol tolerance.