

Hierarchical morphological structure of nickel-loading titanium dioxide/reduced graphene oxide by microwave-assisted synthesis method

이현준, 신은우[†]

울산대학교

(ewshin@ulsan.ac.kr[†])

Titanium dioxide (TiO₂) is well-known as the most basic material in our daily life, has emerged as an excellent photocatalyst material for environmental purification. Scientific studies on photocatalysis started about three and a half decades ago, focus on modified TiO₂ to restrict some primarily disadvantage of TiO₂. Among them, incorporation with reduced graphene oxide (rGO) is becoming popular since it has high adsorption ability, good electron conductivity and being a good substrate for a variety of chemical transformations, which can improve porosity as well as photocatalytic activity of TiO₂. To be more effectiveness, nickel (Ni) is considering for loading into TiO₂/rGO composite. The role of Ni loading had been clarified to extent photoresponse towards lower energy excitation. Herein, we studied the morphology of Ni-loaded TiO₂/rGO (NTG) composites by microwave-assisted method with different process: 1 step (in-situ) and 2 steps. It is seen that Ni loading could exist individually in the form of Ni fcc or insert the TiO₂ lattice structure and creating perovskite NiTiO₃, depending on the process. On the other hand, rGO showed an important role due to incredible surface.