Suil In, Mod Chem Appl 2017, 5:3(Suppl)
DOI: 10.4172/2329-6798-C1-004

5th Global Chemistry Congress

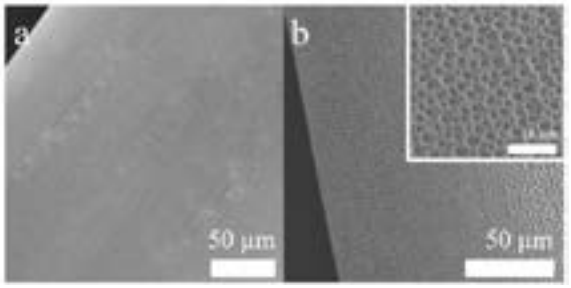
September 04-06, 2017 | London, UK

Suil In

Institute of Science and Technology, South Korea

Catalysts for energy, environment and health

Historically various types of catalysts have been developed to solve urgent problems such as energy, environment and health issues. Recently carbon dioxide's atmospheric concentration continues to rise from the ongoing burning of fossil fuels. Catalysts that use sunlight to convert CO_2 into hydrocarbons and other fuels are attractive to help mitigate this problem, because they are able to simultaneously consume waste CO_2 and generate useful sources of energy in a sustainable and carbon-neutral manner. TiO_2-based materials are the most common photocatalysts for CO_2 conversion, but they require either ultraviolet light because of the large band gap, anion doping to shift the band gap into the visible spectrum, or co-catalysts such as platinum that transfer electrons from the TiO_2 conduction band to the adsorbed CO_2. An alternative strategy is to couple TiO_2 to a p-type semiconductor with a valence band energy that lies near the CO_2/O_2 potential. In terms of health issue, acupuncture as a therapeutic intervention has been widely used for treatment of many pathophysiological disorders. We have developed a new class of acupuncture needles, porous acupuncture needles (PANs) with hierarchical micro/nano-scale conical pores upon the surface, fabricated via a simple and well known electrochemical process, with surface area approximately 20 times greater than conventional acupuncture needles. The performance of these high-surface-area PANs is evaluated by monitoring the electrophysiological and behavioral responses from the *in vivo* stimulation of shenmen (HT7) points in Wistar rats, showing PANs to be more effective in controlling electrophysiological and behavioral responses than conventional acupuncture needles.



Biography

SU-IL IN is Dean of External and International Affairs at Daegu Gyeongbuk Institute of Science and Technology (DGIST) since 2016. He has been working at DGIST since 2012. He received his PhD in Chemistry at University of Cambridge in 2008. He then became a Post-doctoral Researcher at Technical University of Denmark in 2010. He also joined the Department of Chemistry at Pennsylvania State University as a Post-doctoral Researcher before joining DGIST. His current researches include synthesis and analysis of functional nano(bio)-materials for environmentally friendly renewable energy such as photovoltaic, heterogeneous catalysis and biocatalysts.

insuil@dgist.ac.kr

Notes: