Short Communication

Electrocatalysis of CO₂ Reduction on Nano Silver Cathode in Ionic Liquid BMIMBF₄: Synthesis of Dimethylcarbonate

Yafeng Luo, Chuibo Xia, reyisha abulizi, Qiuju Feng*, Wenping Liu, Aihua Zhang,

College of Chemistry and Chemical Engineering, Jishou University, Jishou416000, China

*E-mail: fqj245@126.com

doi: 10.20964/2017.06.67

Received: 12 December 2016 / Accepted: 19 April 2017 / Published: 12 May 2017

Nano silver particles deposited on conductive glass was prepared by cyclic voltammogram. This obtained electrode was used to catalyze electroreduction of carbon dioxide for synthesize dimethylcarbonate. Results show that the process of electrochemical reduction of CO₂ on nano silver particles electrode in 1-butyl-3-methylimidazoliumtetrafluoroborate (BMIMBF₄), is step by step, which is proved by two reduction peaks at -1.8 V and -2.2 V (vs. Ag). Under mild conditions, electrolyses experiments were carried out in an undivided cell at -1.8 V without any toxic solvents, catalysts and supporting electrolytes, yielding the dimethyl carbonate with yield of 83%. Moreover, no other product was found in liquid product.

Keywords: Electrocatalytic, Nano silver, CO₂, Dimethylcarbonate, Ionic liquid

[FULL TEXT](#)

© 2017 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).