Short communication

A selective synthesis of the fullerene-fused dioxane adduct via heterogeneous reaction of C_{60} with α-diols and NaOH under ultrasonication

Zemfira S. Kinzyabaeva, Glus L. Sharipov

PII: S1350-4177(17)30516-3
DOI: https://doi.org/10.1016/j.ultsonch.2017.11.012
Reference: ULTSON 3949

To appear in: *Ultrasonics Sonochemistry*

Received Date: 21 July 2017
Revised Date: 20 October 2017
Accepted Date: 7 November 2017

Please cite this article as: Z.S. Kinzyabaeva, G.L. Sharipov, A selective synthesis of the fullerene-fused dioxane adduct via heterogeneous reaction of C_{60} with α-diols and NaOH under ultrasonication, *Ultrasonics Sonochemistry* (2017), doi: https://doi.org/10.1016/j.ultsonch.2017.11.012

A selective synthesis of the fullerene-fused dioxane adduct via heterogeneous reaction of C_{60} with α-diols and NaOH under ultrasonication

Zemfira S. Kinzyabaeva*, Glus L. Sharipov

Laboratory of High Energy Chemistry and Catalysis, Institute of Petrochemistry and Catalysis, Russian Academy of Sciences

141 Prospekt Oktyabrya, Ufa 450075, Russia

A novel ultrasonic-mediated approach to the synthesis of 1,9-dihydro[C_{60}-I_h][5,6](1,4-dioxano)fullerene based on the heterogeneous reaction of fullerene with α-diols and NaOH has been developed. It allows producing the fullerene derivatives with high yields and selectivity.

Keywords: Fullerene; Cycloaddition reaction; Ultrasound irradiation; Heterogeneous reaction.

1. Introduction

As is known, ultrasound allows performing chemical reactions in the high-rate regimes of the local heating and cooling, which are hardly achievable using other techniques. Ultrasonic waves in liquids induce diverse physicochemical processes, including acoustic cavitation, intensive motion and mixing of the dispersed particles, intensification of mass-exchange and formation of high concentrations of active chemical species, such as radicals and/or ions, which diffuse to a reaction medium and take part in the secondary reactions [1–3]. In this regard, application of ultrasound to heterogeneous chemical processes in systems "solid–liquid" and "liquid–liquid" seems relevant and not requiring the interphase transfer catalysts [4,5].

* *Tel/Fax: +8 347 2842750; e-mail: zefa5@rambler.ru (Z. Kinzyabaeva)*