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The Editorial Board "Supercritical Fluids: Theory and Practice"

The 10th Scientific and Engineering Conference with International Participation "Supercritical Fluids: Fundamentals, Technologies, Innovations"

BOOK of ABSTRACTS

30 September 2019 - 06 October 2019

Rostov-on-Don

Don-2019

P-2

INVESTIGATION OF THE MOLECULAR STRUCTURE OF MEFENAMIC ACID IN SUPERCRITICAL CARBON DIOXIDE BY TWO-DIMENSIONAL NMR SPECTROSCOPY

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Polymorphism of biologically active compounds is a serious problem for the pharmaceutical industry because of its effect on the physical and chemical properties of solid powders. Therefore, the control of the polymorphism of medicinal compounds is a very important and urgent task. The compound possessing conformational polymorphism was chosen as the object of the study (mefenamic acid). Polymorphic forms of mefenamic acid show an enantiotropic transition, the transformation of form I into form II occurs at temperatures above 180°C [1]. Hence, a possible conversion to form II (metastable form) may jeopardize the stability of a pharmaceutical product and may change the effectiveness of the drug. Since the forms of mefenamic acid are determined by the molecular structure, it becomes necessary to investigate its structure in a critical state. This information will help to identify the nature of the nucleation of mefenamic acid. In the present work, the molecular structure of mefenamic acid was studied at supercritical state parameters by two-dimensional NMR spectroscopy.

The experimental data were obtained using the molecular fluid spectroscopy facility of G.A. Krestov Institute of Solution Chemistry, RAS (unique scientific equipment no. 503933). The reported study was funded by the Russian Foundation for Basic Research according to the project no. 18-03-00255. Partial funding was provided by a grant from the President of the Russian Federation for state support of young Russian scientists – candidates of sciences: MK-1409.2019.3.

[1] Khodov I.A., Belov K.V., Efimov S.V., Batista de Carvalho L.A.E. Determination of preferred conformationsof mefenamic acid in DMSO by