### Accepted Manuscript

Research paper

Outsized stochasticity of iodine oxidation with hydrogen peroxide and its implications on the reaction mechanism

Dragomir R. Stanisavljev, Kristina Z. Stevanović, Itana Nuša M. Bubanja

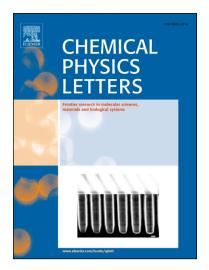
PII: S0009-2614(18)30454-8

DOI: https://doi.org/10.1016/j.cplett.2018.05.065

Reference: CPLETT 35681

To appear in: Chemical Physics Letters

Received Date: 4 April 2018 Accepted Date: 25 May 2018



Please cite this article as: D.R. Stanisavljev, K.Z. Stevanović, I.N.M. Bubanja, Outsized stochasticity of iodine oxidation with hydrogen peroxide and its implications on the reaction mechanism, *Chemical Physics Letters* (2018), doi: https://doi.org/10.1016/j.cplett.2018.05.065

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

### **ACCEPTED MANUSCRIPT**

# Outsized stochasticity of iodine oxidation with hydrogen peroxide and its implications on the reaction mechanism

Dragomir R. Stanisavljev<sup>1,a</sup>, Kristina Z. Stevanović<sup>1</sup> and Itana Nuša M. Bubanja<sup>1</sup>

<sup>1</sup> Faculty of Physical Chemistry, University of Belgrade, Studentski trg 12-16, 11000 Belgrade, Serbia

Abstract We examined the most interesting subsystem of the Bray-Liebhafsky (BL) oscillator i.e. oxidation of iodine to iodate in acidic media with hydrogen peroxide. The reaction induction periods and formed iodate are characterized by potentiometric method and stopped-flow technique. Introduction of a very slow mixing, at 27°C, increased standard deviation of results to 124 from 2.5 in experiments without mixing. It is confirmed at two lower temperatures. In such (initially) simple chemical system the stochasticity is related with random fluctuations forming critical oxygen cavities. Possible energetic coupling of the nucleation processes with chemical reactions is discussed in connection with previous results.

<sup>&</sup>lt;sup>a</sup> Corresponding author E- mail: dragisa@ffh.bg.ac.rs

#### Download English Version:

## https://daneshyari.com/en/article/7837570

Download Persian Version:

https://daneshyari.com/article/7837570

<u>Daneshyari.com</u>