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Domination of thermodynamically demanding oxidative processes in reaction of iodine with hydrogen peroxide

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Abstract We investigated the degree of isothermal iodine conversion to iodate as one of the most intriguing steps of the Bray-Liebafsky oscillator. The amount of the produced iodate, in the presence of hydrogen peroxide, was determined by the stopped-flow titration with iodide ions. From five different experiments, high degree of iodine conversion to iodate (95.4 ± 0.6 %) is obtained. It confirmed that, after the induction period of spontaneous hydrogen peroxide catalytic decomposition, reaction dynamics is dominated by thermodynamically demanding oxidative processes. Isothermal change of the reaction dynamics introduces some specific energy redistribution as a possible initiator of oxidizing radicals.

I. INTRODUCTION

The oxidation of iodine to iodate with hydrogen peroxide is an intriguing step of the Bray-Liebafsky (BL) oscillatory reaction.[1,2] Generally, BL is the process of catalytic

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