

# Book of abstracts



IX International School and Conference on Photonics

## PHOTONICA2023

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August 28 - September 01, 2023, Belgrade, Serbia

*Editors*

Jelena Potočnik, Maja Popović, Dušan Božanić

Vinča Institute of Nuclear Sciences – National Institute of the Republic of Serbia, University of Belgrade

Belgrade, 2023

ABSTRACTS OF TUTORIAL, KEYNOTE, INVITED LECTURES,  
PROGRESS REPORTS AND CONTRIBUTED PAPERS

of

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## Revealing non-equilibrium dynamics by holography: The case of Briggs-Rauscher reaction

M. Pagnacco<sup>1</sup>, M. Simovic Pavlovic<sup>2</sup>, A. Radulovic<sup>3</sup>, B. Bokic<sup>4</sup>, D. Vasiljevic<sup>4</sup> and B. Kolaric<sup>4,5</sup>

<sup>1</sup>University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoseva 12, Belgrade, Serbia

<sup>2</sup>University of Belgrade, Faculty of Mechanical Engineering, Kraljice Marije 16, Belgrade, Serbia

<sup>3</sup>University of Belgrade, Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia

<sup>4</sup>University of Belgrade, Institute of Physics, Photonics Center, Pregrevica 118, Belgrade, Serbia

<sup>5</sup>Micro- and Nanophotonic Materials Group, University of Mons, Place du Parc 20, 7000 Mons, Belgium

e-mail: [simovicmarina99@gmail.com](mailto:simovicmarina99@gmail.com)

In this study, the interferometric (holographic) approach is used to unveil the dynamics of the phase transition, e.g., the formation of solid iodine in the Briggs-Rauscher (BR) non-equilibrium system. Subsequently, after deterministic oscillatory dynamics this system undergoes random transition from state I (low iodide and iodine concentration) to state II (high iodide and iodine concentration, with the formation of solid iodine) [1].

The observed interferometric pattern of dark and bright lines known as fringes is applied to monitor the changes in BR dynamics as a function of time. The pattern abruptly changes at the point of the phase transition.

The power of holography is related to its ability to see the rise of the phase transition directly. At the same time, other methods, such as potentiometry (often used in non-equilibrium studies), are limited by secondary processes such as adsorption and electrode passivation. The holography opens the way to reveal nanoscale dynamics with minimal disturbances in various non-equilibrium systems [2].

### REFERENCES

[1] M.C. Pagnacco *et al.*, J. Phys. Chem. A 122, 482 (2018).

[2] M. Simovic-Pavlovic *et al.*, J. Vis. Exp. 181, e63676 (2022).