

8th Conference of Young Chemists of Serbia
Book of Abstracts

29th October 2022
University of Belgrade, Faculty of Chemistry

CIP – Kategorizacija u publikaciji
Narodna biblioteka Srbije, Beograd

54(048)
577.1(048)
60(048)
66.017/.018(048)

CONFERENCE of the Young Chemists of Serbia (8 ; 2022 ; Beograd) Book of abstracts / 8th Conference of the Young Chemists of Serbia, [Belgrade], 29th October 2022; [organized by Serbian Chemical Society [and] Serbian Young Chemists Club]; [editors Tamara Todorović ... [et al.]]. - Belgrade : Serbian Chemical Society : Serbian Young Chemists Club, 2022 (Belgrade : Development and Research Centre of Graphic Engineering Faculty of Technology and Metallurgy). - 150 str. : ilustr. + 24 cm Tiraž 20. - Bibliografija uz većinu apstrakata. - Registar. ISBN 978-86-7132-080-1

1. Srpsko hemijsko društvo (Beograd) 2. Klub mladih hemičara Srbije (Beograd)

a) Хемија - Апстракти b) Биохемија - Апстракти c) Биотехнологија - Апстракти d) Наука о материјалима – Апстракти

COBISS.SR-ID 78648585

8th Conference of Young Chemists of Serbia

Belgrade, 29th October 2022

Book of Abstracts

Published and organized by

Serbian Chemical Society and Serbian Young Chemists' Club

Karnegijeva 4/III, 11000 Belgrade, Serbia

Tel./fax: +381 11 3370 467; www.shd.org.rs; office@shd.org.rs

Publisher

Dušan **SLADIĆ**, president of Serbian Chemical Society

Editors

Jelena **MILOVANOVIĆ**

Marko **RODIĆ**

Vuk **FILIPOVIĆ**

Života **SELAKOVIĆ**

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Page Layout and Design

Vuk **FILIPOVIĆ**

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Circulation

20 copies

ISBN 978-86-7132-080-1

Printing

Development and Research Centre of Graphic Engineering

Faculty of Technology and Metallurgy, Karnegijeva 4, Belgrade, Serbia

Scientific Committee

Dr. Jelena Milovanović – University of Belgrade, Institute of molecular genetics and genetic engineering

Dr. Marko Rodić – University of Novi Sad, Faculty of Sciences

Dr. Vuk Filipović – University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia

Dr. Života Selaković – University of Belgrade, Faculty of Chemistry

Organizing Committee

Jelena Kesić – University of Novi Sad, Faculty of Sciences

Mila Lazović – Innovative Centre of the Faculty of Chemistry, Belgrade

Mihajlo Jakanovski – Innovative Centre of the Faculty of Chemistry, Belgrade

European Young Chemists' Network

Dr. Maximilian Menche, chair of the EYCN

Preparation and swelling characterization of P(NiPAM/OPGMA) hydrogels

Anita S. Mladenović¹, Zorana Z. Rogić Miladinović¹, Maja M. Krstić, Edin H. Suljovrujić¹

¹ Vinča Institute of Nuclear Sciences, University of Belgrade, National Institute of the Republic of Serbia, Belgrade, Serbia

For many years now, thermally actuated hydrogels have been the ones most studied and employed in the field of polymeric biomaterials. The monomers, N-isopropyl acrylamide (NiPAM), and oligo(propylene glycol) methacrylate (OPGMA) were selected based on the sharp temperature response of their corresponding hydrogels in a known range of temperatures.^{1,2} This research was performed in order to create a new class of P(NiPAM/OPGMA) temperature-responsive hydrogels, and to analyze the influence of different content of monomers on the volume phase transition temperature (VPTT) of the obtained hydrogels. One of the objectives of this study was to provide insight into the effects of applied radiation dose on the swelling and mechanical properties of the hydrogels.

In further work, P(NiPAM/OPGMA) hydrogels were synthesized for the first time by γ -radiation crosslinking of monomers from water/ethanol solution. After the high sol-gel conversion was established, xerogels were subjected to swelling analysis and tested for the mechanism of water diffusion within the hydrogels. The obtained results indicated that new hydrogels based on NiPAM and OPGMA show promising potential for water treatment application due to the relatively high swelling degree of hydrogels and the ability to combine their VPTT close to annual river water temperatures in Serbia.

References

1. Z. Rogić Miladinović, M. Micic, E. Suljovrujić, *J. Polym. Res.* **2016**, 23 (4), 1.
2. K. C. Clarke, S. N. Dunham, L. A. Lyon, *Chem. Mater.* **2015**, 27, 4, 1391.

Acknowledgments

The research was funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia (No. 451-03-9/2021-14/200017).