BOOK of ABSTRACTS

26th Congress of Chemists and Technologists of Macedonia

20-23 9 2023 OHRID, RN MACEDONIA

CXTM

Сојуз на хемичарите и технолозите на Македонија

Society of Chemists and Technologists of Macedonia

26th Congress of SCTM

with International Participation

BOOK of ABSTRACTS

20–23 September 2023
Metropol Lake Resort
Ohrid, N. Macedonia

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Society of Chemists and Technologists of Macedonia

20–23 September 2023, Metropol Lake Resort, Ohrid

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РЕПУБЛИКА СЕВЕРНА МАКЕДОНИЈА
МИНИСТЕРСТВО ЗА ОБРАЗОВАНИЕ И НАУКА

Ss. Cyril and Methodius University in Skopje

The 26th Congress of SCTM is a EuChemS European Chemical Society **recognized event.**

Dear Esteemed Colleagues and Participants,

It is with great pleasure that we present the Book of Abstracts for the 26th Congress of the Society Chemists and Technologists of Macedonia, which was originally scheduled for 2020 but, due to the global pandemic caused by Covid-19, has been rescheduled to this momentous occasion. As we gather here in the breathtaking backdrop of the historic city of Ohrid, Macedonia, we reflect not only on the innovative strides made in the field of chemistry and chemical engineering, but also on the unwavering spirit of resilience that has brought us together despite the challenges that have beset us. The world has experienced an unprecedented disruption, testing the limits of our adaptability and resolve. Yet, as chemists and chemical engineers, we have shown that the pursuit of knowledge and advancement knows no bounds. Our ability to transcend obstacles, adapt methodologies, and harness innovation in the face of adversity is a testament to the invincible human spirit.

Within the pages of this Book of Abstracts with 15 invited lecturers and almost 200 presentations from 174 authors and 570 coauthors from the region and much wider making it a really international meeting, you will find a diverse array of topics that reflect the vigor and dedication of the scientific community. From breakthroughs in green chemistry to pioneering developments in materials science, from the forefront of pharmaceutical research to cutting-edge advancements in nanotechnology, each abstract showcases the remarkable flexibility and ingenuity of our colleagues.

We extend our deepest gratitude to Prof. Jadranka Blaževska Gilev and Prof. Biljana Angjuševa, the organizers of this meeting who have dedicated all their efforts and time to make this meeting possible. Our gratitude goes to all members of the scientific and organizational committees who have been in the background making sure things flow seamlessly, especially to Assoc. Prof. Vojo Jovanov, Iva Dimitrievska and Marija Prosheva for managing the web page, Book of Abstracts etc. Also, our appreciation goes to the reviewers and all participants who have come together to give the substance to this Congress. Your commitment to the scientific endeavor underscores the importance of collaborative efforts in times of uncertainty. It is through the exchange of ideas, the sharing of knowledge, and the fostering of connections that we fortify ourselves and drive the progress of our disciplines. Furthermore, our deepest gratitude goes to the sponsors given at the end of the book and most of all to the Organization for the

Prohibition of Chemical Weapons who have always given their support to our meetings.

As we come together in Ohrid, we do so with renewed appreciation for the importance of shared experiences and face-to-face interactions. We eagerly anticipate the discussions, debates, and collaborations that will shape the future of our disciplines. Let us seize this opportunity to learn, inspire, and foster connections that will resonate long after the congress concludes.

We hope that this Book of Abstracts serves as a source of inspiration and a record of the remarkable work presented at the 26thCongress of SCTM. Let us seize this opportunity to celebrate not only our achievements, but also our resilience, determination, and enduring commitment to the pursuit of knowledge. Let us navigate the challenges together, and through our collective efforts, continue to inspire innovation that transforms the world in a positive way.

With warm regards,

Prof. Zoran Zdravkovski, president

Society of Chemists and Technologists of Macedonia

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Physico-Chemical Properties of Geopolymers Based on Metakaolin with The Addition of Organic Phase PVA

M. Ivanović,[a] S. Knežević,[a] M. Mirković,[a] Lj. Kljajević,[a] M. Nenadović,[b] N. Mladenović Nikolić[a] and S. Nenadović[a]

[1]*Department Department of Materials, Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, University of Belgrade, Mike Petrovića Alasa 12-14, Vinča, 11000 Belgrade, Serbia*

[2]*Department of Atomics Physics, Vinča Institute of Nuclear Sciences, National Institute of the Republic of Serbia, Mike Petrovića Alasa 12-14, Vinča, 11000 Belgrade, Serbia,*

* marija@vin.bg.ac.rs

Recently, there has been a growing interest in mixing two different systems, organic and inorganic, which would contribute to some improved properties, such as adjustment time, reduced shrinkage, improved mechanical properties and durability. A new class of geopolymer composites with an organic matrix has been developed with the main goal of improving the fire resistance of organic polymers and reducing the production of smoke resulting from their combustion, as well as improving mechanical properties.

For the synthesis of hybrid geopolymer materials, metakaolin with the addition of organic phase poly (vinyl alcohol) (PVA) was used as the starting material. For the synthesis of alkaline activator, a solution of NaOH with a molarity of 12 mol / dm3 was used. The chemical composition of the samples was determined by XRF analysis. Structural and phase characterization of hybrid and reference materials were analyzed using X-ray diffraction (XRD) and Fourier-transform infrared spectroscopy (FTIR), which revealed new phases in the PVA-added samples. The results show that the content of added PVA in the reaction mixture affects the phase composition of the synthesized materials. The morphology was analyzed using a scanning electron microscope with energy dispersive spectroscopy (SEM/EDS), where efflorescence was observed and identified. After characterizing the geopolymer with the addition of PVA, we obtained a material that is far more porous than the basic sample, and we can conclude that we have synthesized a material that shows good mechanical properties.

Keywords: metakaolin, geopolymer materials, organic polymer, organic phase, PVA