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# XIV Meeting of Young Chemical Engineers

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Zagreb

Croatian  
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Chemical  
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## BOOK OF ABSTRACTS Knjiga sažetaka

Zagreb, Croatia, 24<sup>th</sup> and 25<sup>th</sup> February 2022

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FAKULTET KEMIJSKOG INŽENJERSTVA I  
TEHNOLOGIJE**

**XIV. SUSRET MLADIH KEMIJSKIH  
INŽENJERA  
KNJIGA SAŽETAKA**

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## UVODNIK

Susret mladih kemijskih inženjera (SMLKI) je dugogodišnji projekt djelatnika Fakulteta kemijskog inženjerstva i tehnologije koji tradicionalno promiču kemijsko-inženjersku disciplinu i ističu važnost kontinuiranog razvoja kemijskog inženjerstva i kemije u Republici Hrvatskoj. Susret se tradicionalno održava svake dvije godine od 1996. u organizaciji Hrvatskog društva kemijskih inženjera i tehnologa i Fakulteta kemijskog inženjerstva i tehnologije Sveučilišta u Zagrebu, a ove godine po prvi puta postaje međunarodni skup. XIV. susret mladih kemijskih inženjera održava se 24. i 25. veljače 2022. godine na Fakultetu kemijskog inženjerstva i tehnologije u Zagrebu.

Ovaj znanstveno-stručni skup okuplja mlade znanstvenike koji će kroz sedam sekcija razmijeniti svoja iskustva i znanja stečena radom u industriji, na sveučilištima, institutima i drugim ustanovama te prezentirati rezultate svojih istraživanja u području kemijskog inženjerstva i kemije. Cilj susreta je afirmirati mlade stručnjake i struku predstavljanjem rezultata postignutih tijekom studija, izrade završnih, diplomskih i znanstveno-stručnih radova. Mladi znanstvenici razmijenit će nova dostignuća u području kemijskog inženjerstva i kemije, novim tehnikama i tehnologijama. Susret nastoji skrenuti pozornost na nužnost interdisciplinarnosti istraživanja, razvoja i provedbe proizvodnih procesa te ponuditi mogućnost otvorenog dijaloga između akademije i privrede.

Na ovogodišnji Susret prijavilo se 264 sudionika sa 193 rada. Tijekom dva radna dana održat će se 2 plenarna, 6 pozvanih, 23 sekcijaska predavanja uz 162 posterska priopćenja i 6 izlaganja sponzora. Ove godine nagrađuju se najbolja posterska priopćenja i najbolje izlaganje u kategoriji sekcijaskih predavanja, a cjeloviti radovi sa Susreta objavit će se u posebnom izdanju časopisa Kemija u industriji. Radovi će prije objavljivanja proći standardni postupak recenzije. Rok za slanje radova je 8. svibnja 2022.

Hvala svima koji su doprinijeli organizaciji XIV. susreta mladih kemijskih inženjera. Svim sudionicima želim uspješan rad i ugodno druženje!

Predsjednik Znanstveno-organizacijskog odbora  
Izv. prof. dr. sc. Krunoslav Žižek

## FOREWORD

The Meeting of Young Chemical Engineers (SMLKI) is a long-standing project of employees of the Faculty of Chemical Engineering and Technology, who traditionally promote the discipline of chemical engineering and demonstrate the importance for its continuous development in the Republic of Croatia. Organized by the Croatian Society of Chemical Engineers and the Faculty of Chemical Engineering and Technology, the Meeting has traditionally been held biennially since 1996 and this year, for the first time, it will be an international meeting. XIV Meeting of Young Chemical Engineers is held on February 24-25, 2022 at the Faculty of Chemical Engineering and Technology in Zagreb.

This scientific and professional meeting will gather young scientists who will share their experience and knowledge from industry, universities, research institutes and other institutions in its seven sections and present their research results in the field of chemical engineering and chemistry. The aim of the Meeting is to strengthen the young experts and our profession by presenting the results of their bachelor's and master's theses obtained during their studies. In addition, young scientists will share their valuable experiences and achievements in the field of chemical engineering and chemistry using new techniques and technologies. The Meeting seeks to focus on the essence of interdisciplinary research, development and enforcement of production processes and provide an opportunity for open dialog between science and industry.

This year's Meeting will gather 264 participants with 193 presentations. Two working days will feature 2 plenary lectures, 6 invited lectures, 23 section lectures with 162 poster presentations and 6 sponsor presentations. This year, prizes will be awarded for best poster presentations and the best oral presentation, while full papers from the Meeting will be considered for publication in the special issue of the journal *Chemistry in Industry*. Prior to publication, papers will undergo a standard peer review process. The deadline for submission of full manuscripts is May 8, 2022.

Many thanks to all who contributed to the organization of the XIV Meeting of Young Chemical Engineers. I wish all participants a successful and enjoyable conference!

Chair of the Scientific and Organizing Committee  
Assoc. Prof. Krunoslav Žižek

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**USMENA IZLAGANJA**  
***ORAL PRESENTATIONS***

# CHARACTERIZATION OF HISTORICAL MORTARS AND IDENTIFICATION OF THEIR PREPARATION TECHNOLOGY: ROMAN MILITARY CAMP VIMINACIUM

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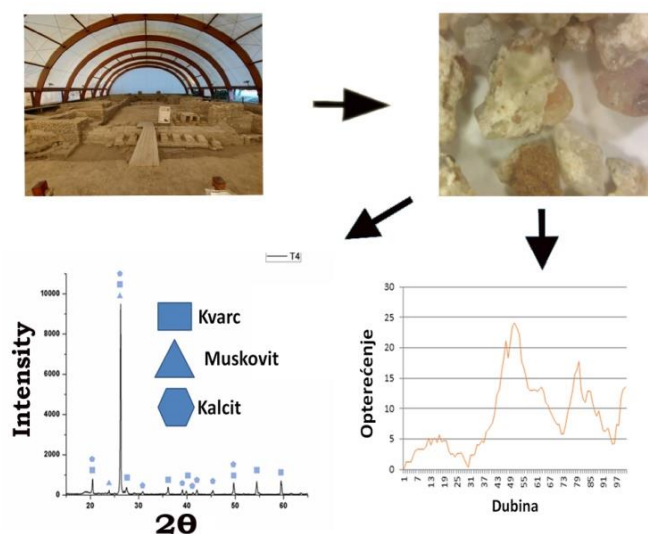
Recent technological developments in the field of material science and applied chemistry have led to the fact that technological research is an inevitable procedure and first step in the diagnosis of historical buildings state. This research required a multidisciplinary approach and brought very valuable scientific knowledge and data for conservation practice [1,2]. The aim of our research paper was detailed characterization of historical mortars from the Roman period: Roman military camp Viminacium [3]. In situ and laboratory examination of the sampled materials included: visual observations, stereo-optical and digital microscopy, spectrophotometry and colorimetry, mineralogical and petrological analyses, physical-mechanical tests, thermal characterization, mechanical and chemical separation of aggregates and binders, and characterization of samples, binders and aggregates. These examinations of historical mortar samples gave information about mortars composition, their technology of preparation, as well as information about their degradation. Data obtained through mortar analyses. Moreover, the obtained results contribute to the knowledge base about Roman mortars on the Danube Limes in Serbia. Furthermore, gained results were taken as the starting point in designing compatible restoration mortar.

The authors are grateful for the support of the Science Fund of the Republic of Serbia, through the Program for Excellent Projects of Young Researchers - PROMIS, Grant Agreement #6067004, Project acronym MoDeCo2000.

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