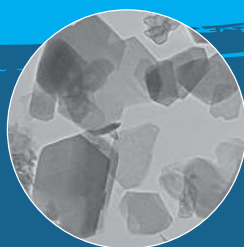
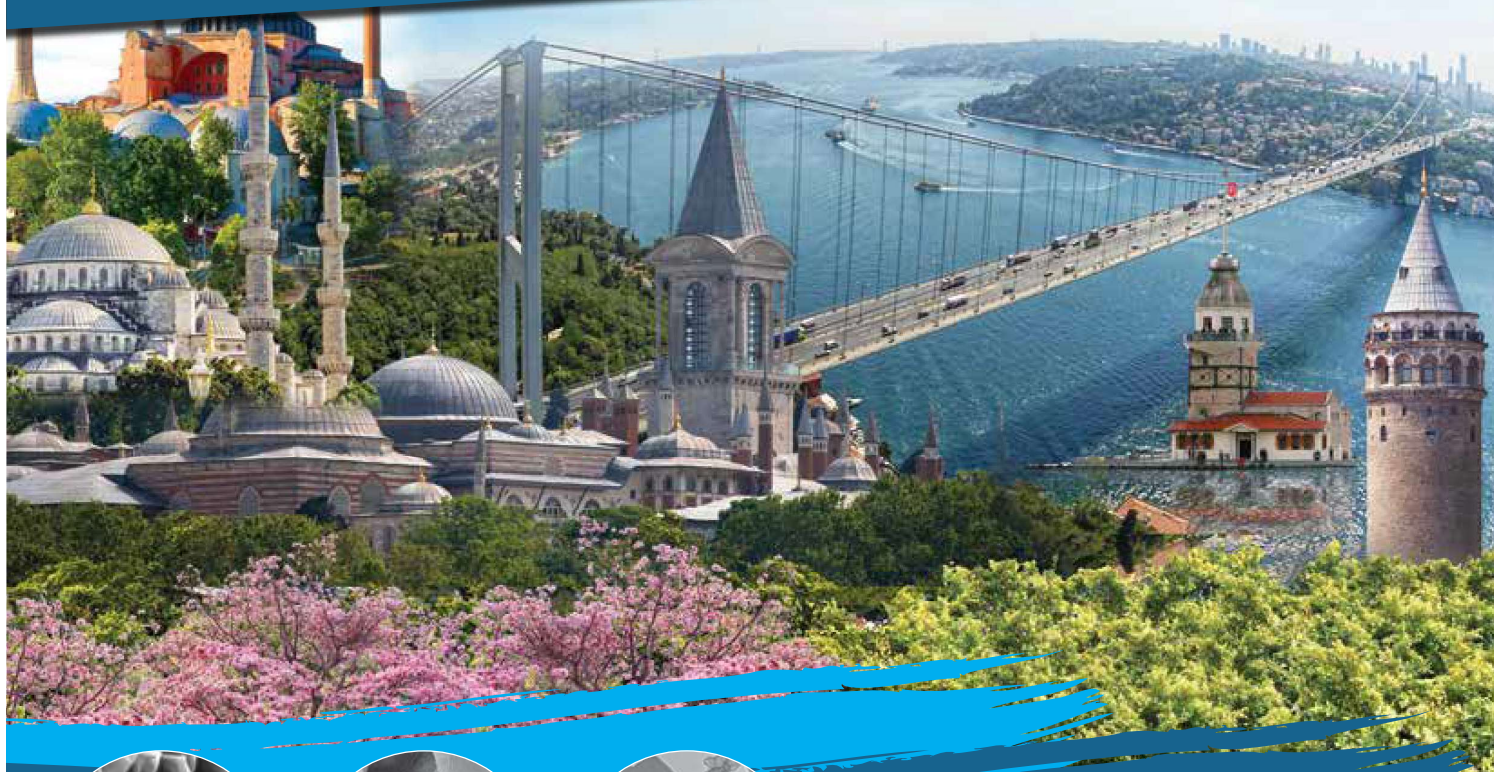


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*New Interfaces Bridging
Continents and Cultures
with Clays*



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ICC 2022**

**25–29 JULY 2022
HILTON MASLAK ISTANBUL, TURKEY**

**SCIENTIFIC RESEARCH
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25–29 JULY 2022

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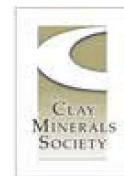
AIPEA

Scientific Research Abstracts

Editors: Selahattin Kadir, Paul A.Schroeder, Asuman Türkmenoğlu, Fahri Esenli, and Emin Çiftçi



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PREFACE

The AIPEA-17th International Clay Conference has been co-organized by The Clay Science Society (Turkey) and The Clay Minerals Society (USA) during July 25-29, 2022, in Istanbul, Turkey. Because of the COVID-19 pandemic, the Conference was conducted in a hybrid format. The Conference venue was the İstanbul Hilton Maslak, next to the İstanbul Technical University Ayazağa Campus in Maslak. The theme of the Conference is expressed, as “*New Interfaces: Bridging Continents and Cultures With Clays*” was selected as a suggestion for the motivation of the Conference.

The scientific program of the 17th ICC 2022 has brought together scientists and researchers coming from many countries who belong to different disciplines related to clays and clay minerals. In addition to the oral and poster presentations, one keynote and eight plenary lectures have been delivered.

This book of abstracts contains the contributions presented during the Conference on a diversity of topics that include: *Clays and the molecules of life, Nanoporous fiborous clays, Clays and health, Pedogenic clays, Clays in the solar system, Clays and contaminant control, Clays and cultural heritage, History of clay science, Soil mineral quantification, Paleoenvironments, diagenesis, proveance of sedimentary deposits, Sepiolite, palygorskite and bentonite, Clays in petroleum, oil, and gas, Rare-Earth elements and clays, High temperature bentonite barriers, Clay geochronology, Clays - burial diagenesis - low temperature metamorphism, Computational modeling of clays and fluid interfaces, Advanced microscopy in clays, Layered double hydroxides, Clays, organics, hybrid materials, Clays geotherms, fluid migrations in sedimentary basins, Clay geotechnical applications, Clays for ceramics, Hydrothermal Clays, Teaching Clay Mineralogy (Keynote), and a General Session.*

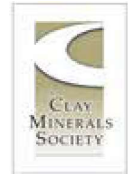
The Organizing Committee appreciates the participant’s effort to present and exchange ideas on their research and consider the future developments in the field of clay science. We are most thankful to all participants who have made an invaluable contribution to the success of the Conference. Many thanks also go to the Scientific Committee members for proposing topics, organizing the thematic sessions, reviewing abstracts and returning critical comments to the authors.

On behalf of the Organizing Committee

Selahattin Kadir
Paul A. Schroeder
Asuman Türkmenoğlu



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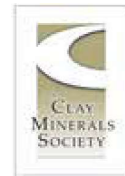


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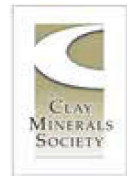


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- 1963: 1st ICC Stockholm - Sweden. Chair: I. Th. ROSENQVIST
- 1966: 2nd ICC Jerusalem - Israel Chair: I.K. BENTOR
- 1969: 3rd ICC Tokyo - Japan. Chair: T. SUDO
- 1972: 4th ICC Madrid - Spain. Chair: E. GUTTIEREZ-RIOS
- 1975: 5th ICC Mexico City - Mexico. Chair: D. CORDOBA
- 1978: 6th ICC Oxford - UK. Chair: D. MITCHELL
- 1981: 7th ICC Bologna - Pavia - Italy. Chair: F. VENIALE
- 1985: 8th ICC Denver - USA. Chair: J.B. HAYES
- 1989: 9th ICC Strasbourg - France. Y. TARDY
- 1993: 10th ICC Adelaide - Australia. Chair: R.A. EGGLETON & R. FITZPATRICK
- 1997: 11th ICC Ottawa - Canada. Chair: H. KODAMA
- 2001: 12th ICC Bahia Blanca - Argentina. Chair: E.A. DOMIGUEZ & F. CRAVERO
- 2005: 13th ICC Tokyo - Japan. Chair: A. INOUE
- 2009: 14th ICC Castellana G. - Italy. Chair: S. FIORE
- 2013: 15th ICC Rio de Janeiro - Brazil. Chair: Sylvia M. COUTO ANJOS
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Electrocatalytic behavior of pillared montmorillonite-supported cobalt oxide doped with Cu, Zn, Fe, and Ni for glucose sensing

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Aluminum pillared montmorillonite-supported cobalt (Co/AP) has proven to be a suitable non-enzymatic sensing material (Mudrinić, 2019). Beside low cost, Co/AP exhibited adequate electrocatalytic performance toward glucose. However, further improvements of electrocatalytic performances are needed, especially regarding increasing sensitivity and widening the linear range of glucose detection.

In this regard, in addition to the monometallic cobalt oxide catalyst, a series of bimetallic catalysts supported on AP (Co+Cu/AP, Co+Zn/AP, Co+Fe/AP, and Co+Ni/AP) have been synthesized by the incipient wetness impregnation method (Pinna, 1998). The total amount of supported metal was fixed at 4 mass%, while cobalt:dopant molar ratio was 9:1 for all samples. The synthesized materials were prepared in the form of carbon paste electrode (Co+dopant/AP-CPE) with the same mass ratio of Co+dopant/AP to carbon black (CB) and applied as a working electrode.

All the electrochemical measurements of each Co+dopant/AP-CPE were conducted using an Autolab PGSTAT302N potentiostat with Nova 2.1 software. The experiments were carried out in a three-electrode cell with prepared electrodes as working, Ag/AgCl (3 M KCl) as a reference electrode, and platinum rod as a counter electrode. Electrochemical behavior of the working electrodes for glucose detection was studied by the cyclic voltammetry and chronoamperometry in alkaline solution, with and without glucose. Among investigated electrodes for glucose electrooxidation, the Co+Fe/AP-CPE exhibited the highest current response with the best sensitivity. These very first results indicated a vital role of Fe in enhancing the glucose-sensing performance of aluminum pillared montmorillonite-supported cobalt. The physical chemical characterization of all Co+dopant/AP materials is ongoing.

Mudrinić, T., Marinović, S., Milutinović-Nikolić, A., Jović-Jovičić, N., Mojović, Z., & Banković, P. (2019). Novel non-enzymatic glucose sensing material based on pillared clay modified with cobalt. *Sensors and Actuators B: Chemical*, <https://doi.org/10.1016/j.snb.2019.126976>.

Pinna, F. (1998). Supported metal catalysts preparation. *Catalysis Today*, [https://doi.org/10.1016/S0920-5861\(98\)00043-1](https://doi.org/10.1016/S0920-5861(98)00043-1).

This work was financially supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (Grant No. 451-03-68/2022-14/200026).