ACIBADEM
MEHMET ALİ AYDINLAR UNIVERSITY

# EMK 2025 | MSC 2025

## 27. ULUSAL ELEKTRON MİKROSKOPİ KONGRESİ

27TH NATIONAL CONGRESS OF ELECTRON MICROSCOPY

## 2ND INTERNATIONAL MICROSCOPY AND SPECTROSCOPY CONGRESS

2. ULUSLARARASI MİKROSKOPİ VE SPEKTROSKOPİ KONGRESİ

**25-27 EYLÜL 2025** / 25-27 SEPTEMBER 2025

# ABSTRACT BOOK



ACIBADEM MEHMET ALİ AYDINLAR UNIVERSITY SCHOOL OF MEDICINE, DEPARTMENT OF HISTOLOGY AND EMBRYOLOGY

ACIBADEM UNIVERSITY CONGRESS CENTER
ATASEHIR, ISTANBUL

www.temdcongress25.org.tr

Dear Colleagues,

It is our great pleasure to welcome you to the 27th National Congress of Electron Microscopy (EMK 2025) and the 2nd International Microscopy and Spectroscopy Congress (MSC 2025), which are organized under the auspices of the Turkish Society for Electron Microscopy and hosted by Department of Histology and Embryology, School of Medicine, Acıbadem Mehmet Ali Aydınlar University, Istanbul, in September 25 to 27, 2025.

Both congresses welcome all microscopy studies in the fields of life sciences and material sciences. We believe that our congresses will contribute to the creation of a scientific environment where microscopy studies will be presented and discussed with the participation of valuable scientists who are experts in their fields, as well as contributing to close cooperation and collaborations including social interactions. Technical presentations and exhibitions of our sponsor companies regarding recent developments in the field of microscopy are included in the congress content.

The Congress venue, Acıbadem University Congress Center, equipped with states-of-arts congress facilities, is situated in city center with an easy access to subway and Marmaray rail line that connects the asian and european sides of the city.

The scientific program includes a series of 1 keynote, 3 plenary lectures, 57 invited lectures, 45 oral presentations and 57 poster presentations from distinguished scientists on microscopy. We appreciate all the esteemed invited speakers and congress participants for their great contributions.

**"Prof. Dr. Ayşe Oğuz- Best Poster Award MSC 2025**'', **"Prof. Dr. Meral Baka- Best Poster Award EMK 2025** 'and '**Prof. Dr. Mahmut Sağlam Best Microstructure Award** " will be presented at both congresses. **"Prof. Dr. Türkan Erbengi Research Award"** which is organized biennially by the Turkish Society for Electron Microscopy in honor of Founding President, Prof. Dr. Türkan Erbengi, will be awarded in the fields of materials sciences and biological sciences in 27th National Congress of Electron Microscopy this year.

Additionally, **"Microscopy School- 3 D Cell Culture & Neurohistology Courses"** will be organized in the first day of the congress on September 27, 2025 in excellent infrastructure of microscopy labs of the campus.

Our congress is organized in accordance with international conference standards. All accepted and presented papers in both congresses will be included in the conference abstract book after undergoing a peer-review process.

The participation and contributions of esteemed microscopists undoubtedly enrich our congresses and the microscopy community.

On behalf of Organizing Committee of Congresses and the Executive Board of the Turkish Society for Electron Microscopy, we wish you all an inspiring, successful and enjoyable congress.

We extend our warmest regards and deeply appreciate your valuable participation.

On behalf of the Organizing Committee,

**Prof. Dr. Serap ARBAK**
Congress Chair- EMK 2025 & MSC 2025/President-Turkish Society for Electron Microscopy

**Prof. Dr. Servet TURAN**
Vice Chair- Turkish Society for Electron Microscopy

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# EMK 2025 ve MSC 2025
# Bütünleşik Bilimsel Program
# Malzeme Bilimi ve Cihazlar (MB ve C)

# EMK 2025 & MSC 2025
# Combined Scientific Programme
# Materials Science & Instrumentation
# (MS and I)

## SEPTEMBER 26, 2025

| | |
|---|---|
| 16:30-17:00 | **COFFEE BREAK** |
| | **MB ve C & MS and I: Session 3 - A102 Hall**<br>Chairs: **Recep Zan, Erçin Ç. Duran** |
| 17:00-17:30 | **Hasan Demirci (Davetli Konuşmacı)**<br>Makro- ve Supra-Biomoleküllerin Zaman Çözünürlüklü Yapısal Kriyo Electron Mikroskopi Çalışmaları |
| 17:30-18:00 | **Kemal Davut (Davetli Konuşmacı)**<br>Eklemeli İmalatla Üretilen Metalik Malzemelerin EBSD Tekniği ve TEM Kullanılarak Mikroyapı ve Kristalografik Dokusunun İncelenmesi |
| 18:00-18:15 | **OP-0091**<br>**Bülent Alkan**<br>Microstructural Characterization and Micropillar Fabrication of Austenitic Stainless Steel for Further Microscale Compression Studies |
| 18:15-18:30 | **OP-0112**<br>**Nermin Demirkol**<br>Assessment of the Effects of İzmit Gulf Sediment on the Microstructural and Technical Characteristics of Porcelain Tiles |
| 18:30-18:45 | **OP-0085**<br>**Birsen Şahin**<br>Correlating Grain Size Control in FAPbI3 Perovskite Solar Cells with Device Quality: Insights from High-Resolution Electron Microscopy |
| 20:00 | **GALA YEMEĞİ** |

# ORAL PRESENTATIONS/ SÖZLÜ BİLDİRİLER

**OP-0112 - Main Topics in Material Sciences - Ceramics**

# Assessment of the Effects of İzmit Gulf Sediment on the Microstructural and Technical Characteristics of Porcelain Tiles

Nermin Demirkol[1], Neslihan Tamsü Selli[2]

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[2]Department of Materials Science and Engineering, Gebze Technical University, Kocaeli, Türkiye

AIM: In line with the "Izmit Bay East Basin Bottom Sludge Cleaning, Dewatering and Disposal Service" Project in cooperation with the Ministry of Environment, Urbanization and Climate Change and Kocaeli Metropolitan Municipality, 8.5 million tons of bottom sludge will be removed within 5 years in the bottom sludge cleaning carried out since May 2023 [1,2]. In today's world, recycling waste materials, utilizing alternative local raw resources, and adopting environmentally conscious approaches have become essential. The aim of this study is to investigate the usability of this waste material as a raw material in porcelain tile production with microstructural and technical investigations.

MATERIALS-METHODS: In this study, bottom mud waste from the İzmit Gulf was incorporated into porcelain tile formulations as a partial substitute for clay at weight ratios of 5%, 10%, and 15%. The specimens were sintered under industrial firing conditions at 1220°C, and their firing shrinkage, bulk density, green and fired flexural strength, and water absorption properties were analyzed and compared to those of conventional porcelain tiles. Phase identification was conducted via X-ray diffraction (XRD), while microstructural features were examined through scanning electron microscopy (SEM).

RESULTS: Notably, the compositions containing 10% bottom mud demonstrated the most favorable outcomes: green strength was twice that of the reference sample, and the fired strength peaked at 85 MPa.
CONCLUSION: This composition is highlighted as a promising candidate for producing more cost-effective, sustainable, and eco-friendly porcelain tile products.

ACKNOWLEDGEMENTS
This study was supported by Kocaeli University Participatory Research Project in collaboration with Gebze Technical University, Project Number: FKA-2024-4084. As all authors, we would like to express our gratitude to Kocaeli University Scientific Research Projects Directorate for their support.

REFERENCES: 1) N. Demirkol, "Revitalisation of Izmit Gulf Bottom Mud with Ceramics," BİLİM KIZI ZİRVESİ, Ankara, Turkey, pp.49-56, 2025.
2) https://www.kocaeli.bel.tr/hizmet/izmit-korfezi-dip-camuru-temizligi-90.html

**Keywords:** Bottom mud, İzmit Gulf, sustainability, porcelain tile, microstructure, technical