



## State of the Art and Future Challenges in Zeolite Catalysts

Guest Editor:

**Dr. Narendra Kumar**

Faculty of Science and  
Engineering, Industrial Chemistry  
and Reaction Engineering, Åbo  
Akademi University,  
Henriksgatan 2, FI-20500 Turku,  
Finland

Deadline for manuscript  
submissions:

**31 December 2024**

### Message from the Guest Editor

Zeolite catalysts are intensively used in the several petroleum refinery processes, such as catalytic cracking, paraffins and xylene isomerization, alkylation process, methanol-to-gasoline conversion, and aromatization for the production of benzene, toluene, and xylenes. Besides petroleum refinery processes, zeolite catalysts are also applied to the production of fine and speciality chemicals, pharmaceuticals, and medicinal drug molecules. Due to their unique properties, such as ion exchange, uniform pore dimensions, shape selectivity, thermal stability, resistance to coke formations, and isomorphous substitutions, these catalytic materials are used for the development of green process technology development. Taking into consideration that zeolite catalysts can be regenerated and reused several times, these catalytical materials are very cost-effective and efficient in the production of fuel components and chemicals. The future challenges of zeolite catalysts are applications in the development of environmentally friendly processes, the discovery of novel zeolite catalysts with new structures, and the effective processing of crude oil to value-added fuel components.

