

ICB PhD public presentations**NATURE AND CATALYTIC
ACTIVITY OF LEWIS ACID EXTRA-
FRAMEWORK SPECIES IN
ZEOLITES****Syeda Rabia Batool**

ICB / The van Bokhoven Group
Supervisor: Prof. Dr. Jeroen A. van Bokhoven
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Dr. Vitaly Sushkevich

**07/09/2023, 1 pm, ETH Hönggerberg
HIL E 10.1 and on Zoom
(<https://psich.zoom.us/j/8738516515>)**



Project Summary: Understanding the nature, origin, and activity of zeolites' Lewis acid sites (LAS) and Bronsted acid sites (BAS) is crucial in tuning their structure for end applications. The BAS is well-established as the bridging hydroxyls of zeolite's framework, whereas LAS is much less defined due to the plurality of the structure and origin. Though the Lewis acidity of zeolites is an extensive area of research and application, that of aluminum in zeolites needs thorough investigation. In particular, many essential questions about the nature, acidity, and structure-activity relations of extra-framework aluminum (EFAI) must be carefully addressed. The present work explores the Lewis acidic aluminum in zeolites, emphasizing the rational design of EFAI LAS. The main goal is to understand the nature, Lewis acidity, and activity of EFAI. Diverse spectroscopic tools, in combination with catalytic evaluation and various treatment conditions, are employed to discern different Lewis acidic aluminum species.

CV: Syeda obtained her Bachelor of Science degree from Bahauddin Zakariya University in 2014. She received an M.Phil. in Chemistry from the same university in 2016. In 2019, she joined the group of Prof. Jeroen A. van Bokhoven at ETH Zürich as a Ph.D. student with a competitive PEEF scholarship.