



## SEMINARI RICERCA E FORMAZIONE

Mercoledì 08 Luglio 2026

ore 11:00-12:00

AULA 205

SEMINARIO/CORSO APERTO A:

Docenti | Teachers, Borsisti | Research  
Fellows, Assegnisti | Postdoctoral  
researchers, Dottorandi | PhD students,  
Studenti | Students, Esterni UNIUPO |  
external UNIUPO people

SEMINARIO/CORSO IN LINGUA:

Inglese | English

# Acidity in Aluminosilicate Lamellar Solids: Does Water Play a Role?

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Framework-Al (AlTd) sites on [Al]-RUB-18 materials with Brønsted acidity were active in ethanol dehydration, however the acidity of partial framework-Al sites (AlOH or aluminol sites) remains unknown. In this presentation we will show how  $^{31}\text{P}$ -MAS-NMR of adsorbed trimethylphosphine oxide (TMPO) was used together with catalytic reactions, in the presence and absence of water, to elucidate the acidity features of aluminol sites on lamellar RUB-18. The crystallinity degree of the structure, Si/Al and AlTd/AlOH molar ratios, and TMPO loadings, under wet and dry conditions, all lead to changes in  $^{31}\text{P}$  resonances. Additional evidence will be shown confirming that the  $(\text{SiO}_4)_4\text{Al}$  and  $(\text{SiO}_4)_3\text{Al}(\text{OH})(\text{H}_2\text{O})_2$  species play a crucial role in biomass-derivative conversion reactions. The simultaneous activity of Brønsted/Lewis acid sites was revealed, with the possibility of the  $(\text{SiO}_4)_3\text{Al}(\text{OH})(\text{H}_2\text{O})_2$  sites acting as LAS. The presentation clarifies the acidity features of aluminol sites on lamellar [Al]-RUB-18 and brings attention to the evaluation of solid catalysts under aqueous-phase conditions.

*Il seminario è promosso dalla Prof. Chiara Bisio*

