



# Will Nano-Zeolites have an impact on the Energy Transition...& beyond?

Lecture hall CH3, Faculty of Science, Hlavova 8, Praha 2 on  
February 5<sup>th</sup>, 2025 at 14:00

**Speaker: Prof. Jean-Pierre GILSON**  
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After a short introduction highlighting the current importance of zeolites in oil refining and petrochemistry, I will introduce the "Zeolite Crystal Engineering" as practiced in Caen. Nanosized zeolites are just one facet of Zeolite Crystal Engineering where the properties of a particular structure are tuned to meet the requirements of specific applications.

Nanozeolites are not only a laboratory invention but a commercial reality that found its place in catalytic processes and separations by adsorption. However, as potentially new applications of zeolites in the energy transition will push them outside their current comfort zone (*i.e.* working at high T in very endothermic reactions or working in hot water conditions), their resilience to extreme environment will be tested.

I will use two examples, one in catalysis (CH<sub>4</sub> upgrading to H<sub>2</sub> and aromatics) and one in adsorption (selective CO<sub>2</sub> adsorption

from a CH<sub>4</sub>/CO<sub>2</sub> mixture) to highlight their potential and illustrate the challenges encountered.

Finally, I will show promising results leading to the use of nanozeolites in glioblastoma (a debilitating form of brain cancer) theragnostic.



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