

## The effect of crystal diversity of nanoporous materials on mass transfer studies

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Nanoporous materials, including zeolites and metal-organic frameworks, find widespread applications in catalysis and separation technologies. Their proper design requires a detailed understanding of the mass transfer mechanisms with their surroundings. This is conventionally deduced from so-called uptake or release curves carried out with batches of nanoporous crystals. The analysis of these batch uptake curves is based on the assumption that all crystals are identical. However, in this presentation, we will show that this approximation may lead to inaccurate conclusions about the material properties. As a consequence of the crystal diversity, the real governing uptake mechanism may be obscured by mimicked mass transfer mechanism. Various experimental and theoretical cases will be presented, including results from single-crystal<sup>[1]</sup> and multiple-crystals uptake measurements<sup>[2]</sup>.

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### References

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