



ΟΜΙΛΗΤΗΣ: **Dr. Despoina Tzoulaki**

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ΘΕΜΑ: **Diffusion Studies on Microporous Materials by Interference Microscopy.**

ΤΟΠΟΣ: Αίθουσα Σεμιναρίων ITE/EIXHMYΘ

ΗΜΕΡΟΜΗΝΙΑ: **Τρίτη, 21 Σεπτεμβρίου 2010**

ΩΡΑ: **12:00**

ΠΕΡΙΛΗΨΗ:

Interference microscopy, an experimental technique recently introduced in the field of diffusion studies on microporous materials has been applied for the investigations of the transport properties of zeolites, silicoaluminophosphates and metal-organic frameworks. Its high spatial resolution ($0.5 \times 0.5 \mu\text{m}$) and unique ability to monitor the intracrystalline concentration profiles every 10 s has established this method as one of the most powerful techniques in this field. Diffusion coefficients are inferred by fitting the recorded concentration profiles to a numerical solution of Fick's 1st Law. Furthermore, interference microscopy has also the advantage to pinpoint irregularities in the interior (and on the surface) of the studied crystal, which were until now unknown. Quite often, though, these irregularities dominate the rate of the diffusion process and, in this case, their disclosure is of major importance.



On the basis of the chosen families of three different microporous materials, the influence of the internal pore structure over the intracrystalline diffusion has been demonstrated, the impact of traces of spurious water molecules on the crystal surface has been revealed and a quantitative study of the surface permeability has been finally possible.

