

# Wave propagation in hierarchical nanoporous materials

R. Venegas<sup>1</sup>

<sup>1</sup>University Austral of Chile, Institute of Acoustics, Valdivia, Chile.

## Abstract

This talk will discuss wave propagation in hierarchical permeable materials characterised by sizes ranging from nanometres up to millimetres and beyond. Specifically, theories of wave propagation in i) nanoporous materials, ii) conventional porous materials with nanoporous coating, iii) double and triple porosity sorptive materials, and iv) porous composites with hierarchical nanoporous constituents will be presented. Particular attention will be devoted to the key role of several different types of diffusion processes and adsorption/desorption on the acoustical properties of hierarchical porous materials as well as how the introduction of pore hierarchies can turn nanoporous solids into efficient low frequency sound absorbers. The talk will conclude by discussing open problems in wave propagation in hierarchical nanoporous materials.

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1 Email: [rodolfo.venegas@uach.cl](mailto:rodolfo.venegas@uach.cl)