

## Energy Colloquium

# Multi-scale Analysis on Natural Gas Storage and Transport in Nanoporous Material

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**Skolkovo Innovation Center**

**Technopark, Building 3, Room 407**



### **ABSTRACT:**

It is now well-documented that a nanoporous material consists of pores with small volumes contributing to the storage of hydrocarbon fluids. These volumes are not much larger than the fluid molecules they store. This presentation will discuss equilibrium and transport behavior of hydrocarbon fluids confined in small pores using atomistic modeling and molecular simulations and compare to the classical fluid. The behavior is different due to pore-wall dominated inter-molecular forces.

The molecular transport effects on flow will be introduced to the audience analyzing steady-state flow of methane at high pressures in single-wall carbon tubes using non-equilibrium molecular dynamics simulations. The presentation will conclude with an expression for apparent permeability and a demonstration of the impact of the observed fluid behavior on the hydrocarbon in-place and reserve calculations.

**Non-Skoltech attendees should request access to the building in advance by sending their passport details to [energy.colloquium@skoltech.ru](mailto:energy.colloquium@skoltech.ru)**

**Colloquium schedule and information on how to get to the colloquium can be found at <http://www.skoltech.ru/research/en/events/energy-colloquium/>**