

# **Methane hydrate formation and distribution in pore spaces of porous media by kinetics and thermodynamics**

DAYONG WANG<sup>1</sup>, DONGYAN HAN<sup>1</sup>

<sup>1</sup> Key Laboratory of Ocean Energy Utilization and Energy Conservation of Ministry of Education, School of Energy and Power Engineering, Dalian University of Technology, Dalian 116023, P. R. China.

In this study, a multi-phase physicochemical model for methane hydrate formation and distribution in pore spaces of porous media is proposed, which couples heat and mass transfer, interphase force balance, phase change kinetics and thermodynamics. Numerical simulation results reproduce the experimental phenomenon, which shows the initial growth of hydrate at gas/water interface near hydrophilic particle surfaces followed by an extension into the middle part of pore space due to pore water movement.