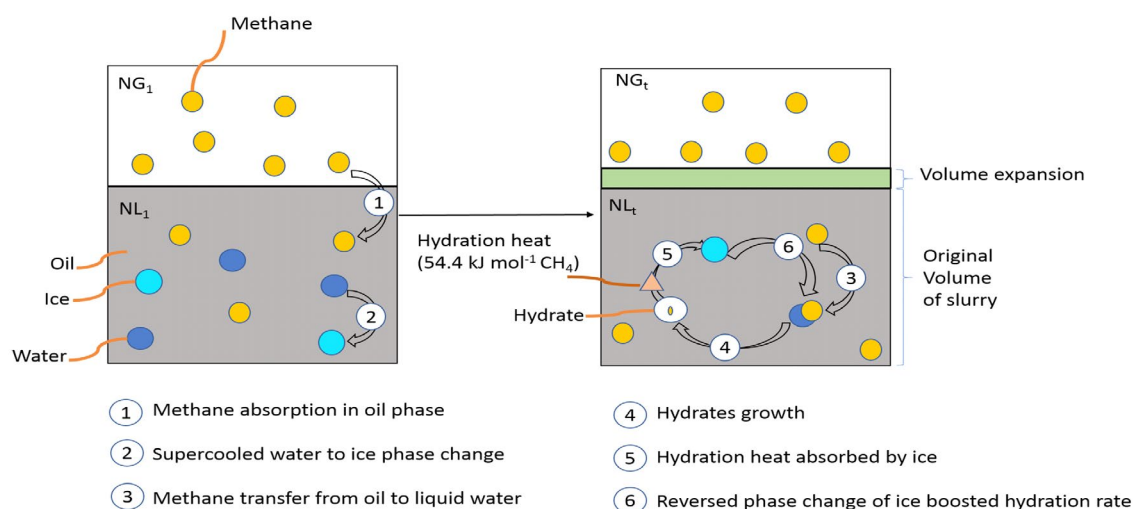


Rate Enhancement of Methane Hydration in Slurry of Ice by Phase Change of Water-in-Oil Emulsions

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The paraffin, decane, octane and hexane, were chosen to make emulsions of the water-in-oil in terms of their lower fusion points and higher methane solubilities to study the methane hydration rate. The ice particles from supercooled emulsions provided the nucleation center and removed the hydration heat promptly through their reversed phase change. Meanwhile the solubility differences of methane in the paraffins and water enlarged the driving force of mass transfer. Finally, the hydration rates of methane were significantly enhanced in a batch autoclave at initial conditions of temperature from -1 to -5.7°C , pressure 5.90MPa, water-cuts 10–30 vol% and stirrer speed of 700 rpm. The highest hydration rate reached $158.2 \text{ kmol h}^{-1} \text{ m}^{-3}$, which is obviously larger than those in the slurry of phase change material in water and the other achievements.



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