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Modeling Gas Hydrate Growth Kinetics in Water-in-Oil Emulsion for Offshore Petroleum Production Applications

Carlos L. BASSANI, Ana CAMEIRÃO, Rigoberto E.M. MORALES, Jean-Michel HERRI

Objective: to model gas hydrate growth kinetics based on the multiphase L-L flow pattern

Literature: still scarce and open models

Main phenomena to be accounted for:
- Gas diffusion and water permeability through hydrate shell
- Water core pressurization
- Bulk depletion vs gas absorption

Introduction

Mathematical modeling

Conclusions and future perspectives

Complete modeling of particle growth based on mass transfer resistances

Future coupling with population balance and L-G flow for pressure and temperature prediction along pipeline

Future measurement of needed closure parameters \( \rightarrow \) gas solubility in oil, O-W interface tension, crystal integration rate

For more information on the subject:

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