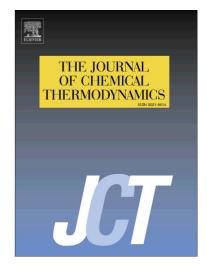
Accepted Manuscript

Kinetic promotion of methane hydrate formation by combining anionic and silicone surfactants: scalability promise of methane storage due to prevention of foam formation

Gaurav Bhattacharjee, Vivek Barmecha, Omkar S. Kushwaha, Rajnish Kumar

PII: DOI: Reference:	S0021-9614(17)30354-3 https://doi.org/10.1016/j.jct.2017.09.029 YJCHT 5228
To appear in:	J. Chem. Thermodynamics
Received Date: Revised Date: Accepted Date:	12 September 201722 September 201723 September 2017



Please cite this article as: G. Bhattacharjee, V. Barmecha, O.S. Kushwaha, R. Kumar, Kinetic promotion of methane hydrate formation by combining anionic and silicone surfactants: scalability promise of methane storage due to prevention of foam formation, *J. Chem. Thermodynamics* (2017), doi: https://doi.org/10.1016/j.jct.2017.09.029

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Kinetic promotion of methane hydrate formation by combining anionic and silicone surfactants: scalability promise of methane storage due to prevention of foam formation

Gaurav Bhattacharjee^{t, Y}, Vivek Barmecha^t, Omkar S. Kushwaha^t and Rajnish Kumar^{$\xi,*$}

[†] Chemical Engineering and Process Development Division, CSIR-National Chemical Laboratory, Pune 411008, Maharashtra, India

^YAcademy of Scientific and Innovative Research (AcSIR), CSIR-NCL Campus, Pune, India

^٤Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai 600 036, Tamil Nadu, India

Corresponding Author

* Tel: +91 44 2257 4180, E-mail: rajnish@iitm.ac.in

Abstract:

Methane storage in its solid hydrate form has recently come up as a rather attractive and low risk option for large scale storage of the gas owing to its mild storage conditions, high gas retention capacity and benign (non-explosive) character. However, it has its fair share of limitations with the slow rate of hydrate formation being one of the most prominent. The addition of surfactants like Sodium dodecyl sulfate (SDS) to the hydrate forming system significantly speeds up the process of methane hydrate formation but the large amount of foam generated by these surfactants during the process of hydrate formation and dissociation stands as a major roadblock towards the scaling up of the technology. In the current work, a small amount of a silicon based surfactant SDS to eliminate the foam generation while at the same time promote the kinetics of methane hydrate formation. The idea is simple, cost effective and can be a potential game-changer in the quest to develop a commercially scalable hydrate based methane storage technology.

Keywords: Gas Hydrate, Methane Storage, Silicone Surfactant, Antifoam, Kinetics, Scale-up

دريافت فورى 🛶 متن كامل مقاله

- امکان دانلود نسخه تمام متن مقالات انگلیسی
 امکان دانلود نسخه ترجمه شده مقالات
 پذیرش سفارش ترجمه تخصصی
 امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
 امکان دانلود رایگان ۲ صفحه اول هر مقاله
 امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
 دانلود فوری مقاله پس از پرداخت آنلاین
 پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات
- ISIArticles مرجع مقالات تخصصی ایران