

Bridging the Gap in Hydrates and Multiphase Flow

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Abstract

Gas hydrates is a significant part in the portfolio of topics covered in the flow assurance of oil and gas production. Major advances have been made in understanding hydrates formation in multiphase system, which has enabled a gradual shift in practice to hydrate management from avoidance. In hydrate management, the challenges for hydrates also shift from formation to transportability, which is significantly a much more complex problem due to the hydrodynamic of flow and dispersion of the phases. As such, understanding the interplay of hydrates and multiphase flow is critically important, especially in quantifying how hydrate formation is determined by the flow characteristics and how the flow regime is altered by the presence and distribution of hydrates. This contribution explores the limited knowledge in this area and expands on the experimental and modeling areas which must be studied to develop the knowledge and tools for effective hydrate management. Some of the key areas to be discussed include hydrate distribution in flowlines and among phases, hydrate deposition, hydrate non-equilibrium kinetics, hydrate accumulation, flow regime, and phases dispersion.