High-pressure / High-temperature Behavior of the Methane-Ammonia-Water System up to 3 GPa

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Melting phase relations in the methane-ammonia-water system up to 3 GPa have been obtained in a series of *in situ* experiments in externally heated diamond anvil cells. The melting temperature of methane clathrate hydrates increases rapidly above pressures of $\sim$ 1.5 GPa, and does not appear to be significantly affected by the presence of ammonia. The reaction of the hydrate formation at pressures 2 – 3 GPa is kinetically impeded. Our data show that the high-pressure methane hydrate has the maximum melting temperature among the clathrate hydrates studied so far.

Key words: Clathrate Hydrates, Melting Curve, High Pressure