

SANS study of Silica Aerogel as Model Material for Rock

Thursday, 12 November 2020 17:55 (1 minute)

Unconventional hydrocarbon resources have been of large interest in recent years, hence, there are greater needs for more accurate estimations of gas reserve in the reservoirs. Although researchers use the SANS technique to investigate open and closed porosity in rocks routinely, the effects of nanopore condensation is not well understood. This study investigates the behavior of deuterated methane (CD_4) in the nanopore at different gas pressures using SANS. Silica aerogel was chosen as the sample for this study due to the assumed similarity in its composition to sandstone which mainly consists of quartz. However, the aerogel is a synthetic material with a totally opened pore structure and the lack of impurities, which prevents other factors from affecting the interaction between CD_4 and the pores. We plan to use the aerogel result to work on a model of methane condensation in nanopores which then can be used to evaluate the extent of this phenomenon in real rocks. We also show how the application of contrast matching measurements revealed the pore structure of the aerogel we studied at larger scales where the features of the aerogel matrix were not as expected and were limited to certain sizes rather than exhibiting a fractal behavior found in previous SANS measurements of aerogels.

Level of Expertise

Student

Speakers Gender

Male

Do you wish to take part in the poster slam

No

Primary author: VU, Phung Nhu Hao (UNSW Sydney)

Co-authors: Dr BLACH, Tomasz (UNSW Sydney); Prof. RADLINSKI, Andrzej; Prof. REGENAUER-LIEB, Klaus

Presenter: VU, Phung Nhu Hao (UNSW Sydney)

Session Classification: Poster Session

Track Classification: Earth & Environment