

Trapping pressure estimation of single gaseous inclusion using PVT simulation and applications in fluid behaviour resolving

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We proposed an alternative way to estimate volumetric vapour:liquid ratio of gaseous or light-petroleum inclusions without fluorescence using regularly-shaped inclusions to estimate volumetric vapour:liquid ratios through geometric methods. The method was applied to the inclusions from the rock samples of the Lower Triassic Feixianguan and Jialingjiang fms, NE Sichuan (China). The trapping pressures of inclusion fluids were estimated by intersecting the isochore equations of coeval gaseous inclusion and aqueous inclusions (Fig. 1). Fluid densities and gas-oil ratios (GOR) were also estimated. The estimated trapping PT are slightly lower for the Jianlingjiang fm (29.69-31.33 MPa, 93.5-105.2 °C) than for the Feixianguan fm (31.02-34.38 MPa, 98-148 °C), and the trapping time of the inclusions in the Jialingjiang Formation and Feixianguan Formation were estimated at about 173-170 Ma and 178-168 Ma, respectively. The distribution of high pressures correlates with the presence of pyro-bitumen in the reservoir rocks, suggesting the migrated fluid is derived mainly from the secondary cracking of oil. The modeled fluid density and GOR correspond to a typical light oil or condensate, suggesting an origin for the trapped hydrocarbons as an intermediate product in this process [1]. Acknowledging Strategic Program of CAS (XDB10010300) & NSFC (41372137) for grants.

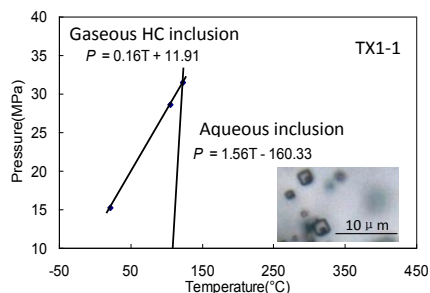


Fig. 1 P-T diagram showing calculated trapping T-P of coexisting gaseous HC and aqueous fluid inclusions from Well TX1-1 of NE Sichuan

[1] Wang et al. (2016) *Mari.&Petro. Geology*. DOI 10.1016/j.marpetgeo.2017.02.028.