

QIN Huan, CHI Zhe, ZHOU Hua, SUN Xiaochi, MENG Fanwei and PEI Ni, 2014. The relation among synthetic fluid inclusions homogenization temperature of halite, air temperature and water temperature under natural conditions. *Acta Geologica Sinica* (English Edition), 88(supp. 1): 244.

The Relation among Synthetic Fluid Inclusions Homogenization Temperature of Halite, Air Temperature and Water Temperature under Natural Conditions

QIN Huan¹, CHI Zhe¹, ZHOU Hua¹, SUN Xiaochi¹, MENG Fanwei^{1,2,3} and PEI Ni^{1,2}

¹ Nanjing University, Nanjing 210093, China

² State Key Laboratory for Mineral Deposit Research, Institute of Geo-Fluids, School of Earth Science and Engineering, Nanjing University, Nanjing 210093, China

³ State Key Laboratory of Palaeobiology and Stratigraphy, Nanjing Institute of Geology and Palaeontology, Chinese Academy of Sciences, Nanjing 210008, China

A large number of fluid inclusions are formed in the crystal formation of halite, in which pure liquid phase ones supply a new method of paleo temperature inversion by means of cryogenic thermometry. In this study, we measured homogenization temperature of fluid inclusions and record the air temperature during the crystal formation. According to the compare results, we drew a conclusion that the homogenization temperature of fluid inclusions can only reflect the change of the maximum temperature, but not all temperature during the crystal formation.

Key words: halite fluid inclusions; homogenization temperature; air temperature; maximum temperature

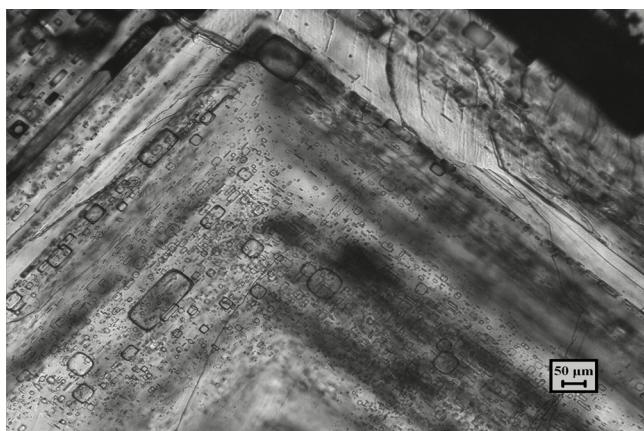


Fig. 1. Photo of synthetic fluid inclusions, laboratory-grown salt.

Table 1 Statistics of homogenization temperatures of fluid inclusions in halite and air temperatures

temperature range air temperatures	homogenization temperatures of fluid inclusions in halite
10.5-15.5	0
15.5-20.5	5
20.5-25.5	11
25.5-30.5	23
30.5-35.5	21
35.5-40.5	5
	7
	24
	44
	82
	113
	10

Acknowledgements

The project was funded by Nanjing University. The State Key Laboratory for Mineral Deposit Research provided field and laboratory expenses. And the authors thank to Professor Junying Ding for her suggestions during the experiment.

References

- Dreyer, R.M., Garrels, R.M., and Howland, A.L., 1949. Liquid inclusions in halite as a guide of geologic thermometry. *American Mineralogist*, 34: 26–34.
- Robert H. Goldstein, 2001. Clues from Fluid Inclusions. *Science*, 294: 1009–1010.
- Roedder, E., and Belkin, H.E., 1979. Application of studies of fluid inclusions in Permian Salado Salt, NM, to problems of siting the waste isolation pilot plant. In: McCarthy, G.J. (ed.), *Scientific Basis for Nuclear Waste Management*, Vol. 1. Plenum, 313–321.
- Tim K. Lowenstein, Jianren Li and Christopher B. Brown, 1998. Paleotemperatures from fluid inclusions in halite: method verification and a 100,000 year paleotemperature record, Death Valley, CA. *Chemical Geology*, 150: 223–245.

* Corresponding author. E-mail: qinhuannju@163.com