

(见第三章)。最后测定CO₂-H₂O包裹体的均一温度(或爆裂温度)，一般此温度在+200℃～+400℃之间。

要得到流体包裹体数据没有捷径可走。对于一个研究课题收集数据初学者可能要花费三个月的时间，一个有经验的人也很少少于一个月的时间。这需要有极大的耐心。因此要花时间选择样品，在开始进行测量之前首先要认清这个问题。

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参考文献

- Bilal, A. and Touret, J. (1976): Les inclusions fluides des enclaves caténaires de Bournac (Massif Central). *Bull. Minéral.* 99, 134-139.
- Burruss, R.C. (1977): Analysis of fluid inclusions in graphitic metamorphic rocks from Bryant Pond, Maine, and Khtada Lake, British Columbia: Thermodynamic basis and geologic interpretation of observed fluid compositions and molar volumes. Ph.D. Thesis, Princeton University.
- Casadevall, T. and Ohmoto, H. (1977): Sunnyside mine, Eureka mining district, San Juan County, Colorado: Geochemistry of gold and base metal ore deposition in a volcanic environment. *Econ. Geol.* 72, 1285-1320.
- Crawford, M.L., Filer, J. and Wood, C. (1979): Saline fluid inclusions associated with retrograde metamorphism. *Bull. Minéral.* 102, 562-568.
- Cunningham, C.G. and Corollo, C. (1980): Modification of a fluid-inclusion heating/freezing stage. *Econ. Geol.* 75, 335-337.
- Deicha, G. (1950): Essais par écrasement de fragments minéraux pour la mise en évidence d'inclusions de gaz sous pression. *Bull. Minéral.* 73, 439-445.
- Magni, R.D. and Trancynger, T.C. (1977): Sequence of deposition of the ore minerals at the Magmont mine, Viburnum Trend, southeast Missouri. *Econ. Geol.* 72, 451-464.
- Hendel, E.-M. and Hollister, L.S. (1981): An empirical solvus for $\text{CO}_2\text{-H}_2\text{O}$ -2.6 wt. % salt. *Geochim. Cosmochim. Acta* 45, 225-228.
- Henry, D.L. (1978): A study of metamorphic fluid inclusions in granulite facies rocks of the eastern Adirondacks. A.B. Thesis, Princeton University.
- Holland, R.A.G., Bray, C.J. and Spooner, E.T.C. (1978): A method for preparing doubly-polished thin sections suitable for microthermometric examination of fluid inclusions. *Minéral. Mag.* 42, 407-408.
- Hollister, L.S. and Burruss, R.C. (1976): Phase equilibria in fluid inclusions from the Khtada Lake metamorphic Complex. *Geochim. Cosmochim. Acta* 40, 163-175.
- Hollister, L.S., Burruss, R.C., Henry, D.L. and Hendel, E.-M. (1979): Physical conditions during uplift of metamorphic terranes, as recorded by fluid inclusions. *Bull. Minéral.* 102, 555-561.
- Jehl, V. (1975): Le métamorphisme et les fluides associés des roches océaniques de l'Atlantique Nord. Thèse de docteur-ingénieur, Univ. Nancy I
- Kerrick, R. (1976): Some effects of tectonic recrystallization on fluid inclusions in vein quartz. *Contr. Mineral. Petrol.* 59, 195-202.
- Konnerup-Madsen, J. (1977): Composition and microthermometry of fluid inclusions in the Kleivatn granite; South Norway. *Amer. J. Sci.* 277, 673-696.

- Lemmlein, G.G. (1956): Formation of fluid inclusions in minerals and their use in geological thermometry. *Geokhimiya* 1956, 84-94 (in Russian; translation in *Geochemistry* 1956, 630-642).
- Leroy, J. (1979): Contribution to the evaluation of internal pressure in fluid inclusions when they decrepitate. *Bull. Minéral.* 102, 584-593.
- Lokerman, A.A. (1962): The possibility of study of the interrelations of dikes and mineralization from inclusions in minerals. *L'vov Geol. Obshch. Mineralog. Sbornik* 14, 312-317 (in Russian).
- MacDonald, A.J. and Spooner, E.T.C. (1981): Calibration of a Linkam TH 600 programmable heating-cooling stage for microthermometric examination of fluid inclusions. *Econ. Geol.* (in review).
- Moore, J.G., Bischelder, J.N. and Cunningham, C.G. (1977): CO₂-filled vesicles in mid-ocean basalt. *J. Volcanol. Geotherm. Res.* 2, 309-327.
- Neumov, V.B., Balitskyi, V.S. and Khetchikov, L.N. (1966): Correlation of the temperatures of formation, homogenization and decrepitation of gas-fluid inclusions. *Akad. Nauk SSSR Dokl.* 171, 183-185 (in Russian, translated in *Dokl. Acad. Sci. U.S.S.R.* 171, 146-148).
- Poty, B., Leroy, J. and Jachimowicz, L. (1976): Un nouvel appareil pour la mesure des températures sous le microscope: l'installation de microthermométrie Chaixmeca. *Bull. Minéral.* 99, 182-186 (in French; translated in *Fluid Inclusion Research -- Proc. COFFI* 2, 173-178 (1976)).
- Roedder, E. (1967): Metastable "superheated" ice in liquid-water inclusions under high negative pressure. *Science* 155, 1413-1417.
- Roedder, E. (1970): Application of an improved crushing microscope stage to studies of the gases in fluid inclusions. *Schweiz. Min. Pet. Mitt.* 50, 41-58.
- Roedder, E. (1971): Metastability in fluid inclusions. *Soc. Mining Geol. Japan, Spec. Issue 3*, 327-334.
- Roedder, E. (1972): The composition of fluid inclusions. *U.S. Geological Survey Prof. Paper 440JJ*, 164 pp.
- Roedder, E. (1976): Fluid-inclusion evidence on the genesis of ores in sedimentary and volcanic rocks. Chap. 4. In: *Handbook of Strata-Bound and Stratiform Ore Deposits* (K.H. Wolf, Ed.), 2, *Geochemical Studies*, 67-110. Elsevier, Amsterdam.
- Roedder, E. and Coombs, D.S. (1967): Immiscibility in granitic melts, indicated by fluid inclusions in ejected granitic blocks from Ascension Island. *Jour. Petrology* 8, 417-451.
- Shepherd, T. (1981): Temperature programmable heating-freezing stage for microthermometric analysis of fluid inclusions. *Econ. Geol.* (in review).
- Simmons, G. and Richter, D. (1976): Microcracks in rocks. In: *The Physics and Chemistry of Minerals and Rocks* (R.G.J. Strens, Ed.), 105-137. Wiley, New York.

- Sisson, J., Crawford, M.L. and Thompson, P. (1981): CO_2 -brine immiscibility at high temperatures: evidence from calcareous metasedimentary rocks. *Contr. Mineral. Petrol.* (in review).
- Swanenberg, H.E.C. (1980): Fluid inclusions in high-grade metamorphic rocks from S.W. Norway. *Geologica Ultrajectina*, Univ. Utrecht, no. 25, 147 pp. (in English).
- Touret, J. (1974): Facies granulite et fluides carboniques. In: *Géologie des Domaines Cristallins*, Soc. Géol. Belgique Liège, 267-287.
- Tuttle, O.F. (1949): Structural petrology of planes of liquid inclusions. *J. Geol.* 57, 331-356.
- Weast, R.C. (1980): *CRC Handbook of Chemistry and Physics*, 60th Editions. CRC Press, Inc., Boca Raton, Florida.
- Werre, R.W., Jr., Bodnar, R.J., Bethke, P.M. and Barton, P.B., Jr. (1979): A novel gas-flow fluid inclusion heating/freezing stage (abst.). *Geol. Soc. America Abs. with Prog.* 11, 539.
- Wilkins, R.W.T. and Barkas, J.P. (1978): Fluid inclusions, deformation and recrystallization in granite tectonites. *Contr. Mineral. Petrol.* 65, 293-299.

- Sisson, J., Crawford, M.L. and Thompson, P. (1981): CO_2 -brine immiscibility at high temperatures: evidence from calcareous metasedimentary rocks. *Contr. Mineral. Petrol.* (in review).
- Swanenberg, H.E.C. (1980): Fluid inclusions in high-grade metamorphic rocks from S.W. Norway. *Geologica Ultrajectina*, Univ. Utrecht, no. 25, 147 pp. (in English).
- Touret, J. (1974): Facies granulite et fluides carboniques. In: *Géologie des Domaines Cristallins*, Soc. Géol. Belgique Liège, 267-287.
- Tuttle, O.F. (1949): Structural petrology of planes of liquid inclusions. *J. Geol.* 57, 331-356.
- Weast, R.C. (1980): *CRC Handbook of Chemistry and Physics*, 60th Editions. CRC Press, Inc., Boca Raton, Florida.
- Werre, R.W., Jr., Bodnar, R.J., Bethke, P.M. and Barton, P.B., Jr. (1979): A novel gas-flow fluid inclusion heating/freezing stage (abst.). *Geol. Soc. America Abs. with Prog.* 11, 539.
- Wilkins, R.W.T. and Barkas, J.P. (1978): Fluid inclusions, deformation and recrystallization in granite tectonites. *Contr. Mineral. Petrol.* 65, 293-299.

- Sisson, J., Crawford, M.L. and Thompson, P. (1981): CO_2 -brine immiscibility at high temperatures: evidence from calcareous metasedimentary rocks. *Contr. Mineral. Petrol.* (in review).
- Swanenberg, H.E.C. (1980): Fluid inclusions in high-grade metamorphic rocks from S.W. Norway. *Geologica Ultrajectina*, Univ. Utrecht, no. 25, 147 pp. (in English).
- Touret, J. (1974): Facies granulite et fluides carboniques. In: *Géologie des Domaines Cristallins*, Soc. Géol. Belgique Liège, 267-287.
- Tuttle, O.F. (1949): Structural petrology of planes of liquid inclusions. *J. Geol.* 57, 331-356.
- Weast, R.C. (1980): *CRC Handbook of Chemistry and Physics*, 60th Editions. CRC Press, Inc., Boca Raton, Florida.
- Werre, R.W., Jr., Bodnar, R.J., Bethke, P.M. and Barton, P.B., Jr. (1979): A novel gas-flow fluid inclusion heating/freezing stage (abst.). *Geol. Soc. America Abs. with Prog.* 11, 539.
- Wilkins, R.W.T. and Barkas, J.P. (1978): Fluid inclusions, deformation and recrystallization in granite tectonites. *Contr. Mineral. Petrol.* 65, 293-299.