

Fig. A1 (a) Photomicrograph of the whole thin section of sample 10DP01a. (b) TIMA scanned mineral distribution in sample 10DP01a. Green stars are the locations of Zrn.

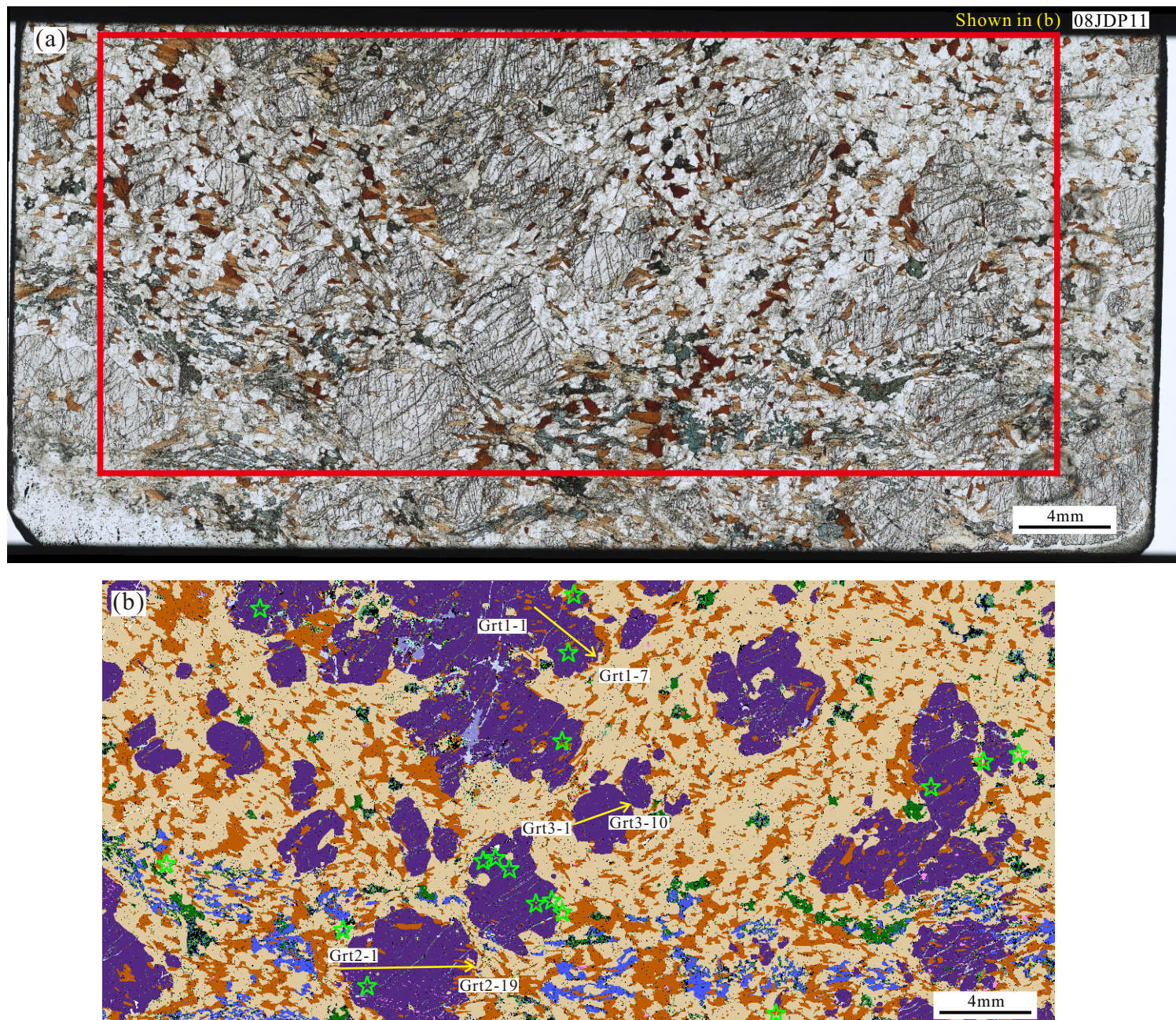


Fig. A2 (a) Photomicrograph of the whole thin section of sample 08JDP11. (b) TIMA scanned mineral distribution in sample 10DP01a. Green stars are the locations of Zrn. Mineral legends follow those in Fig. A1.

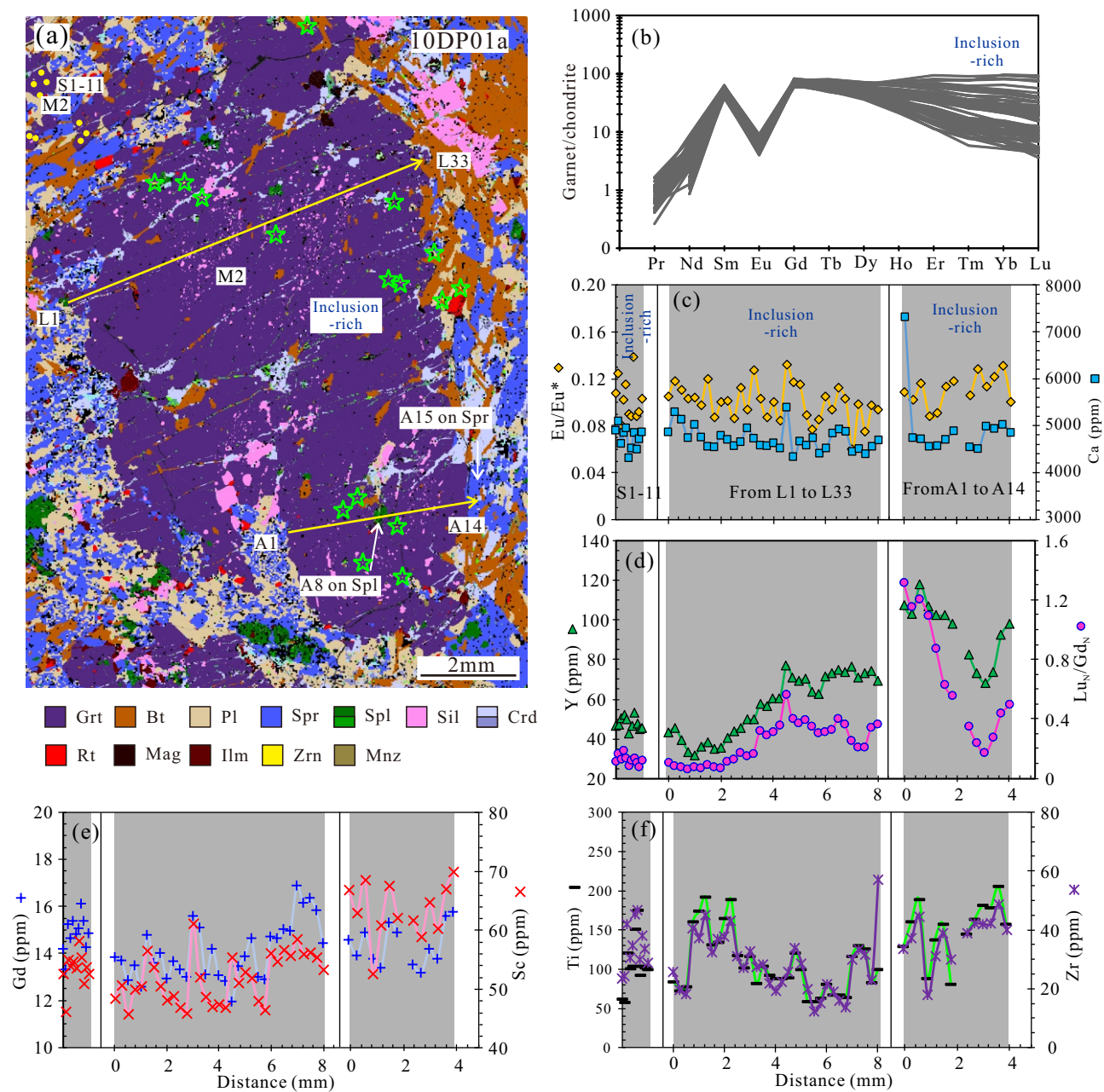


Fig. A3 (a) The analyzed Grt from sample 10DP01a. (b) Chondrite-normalized REE patterns of the Grt. (c) Eu/Eu* and Ca zoning of the Grt. (d) Y and Lu_N/Gd_N zoning of the Grt. (e) Gd and Sc zoning of the Grt. (f) Ti and Zr zoning of the Grt.

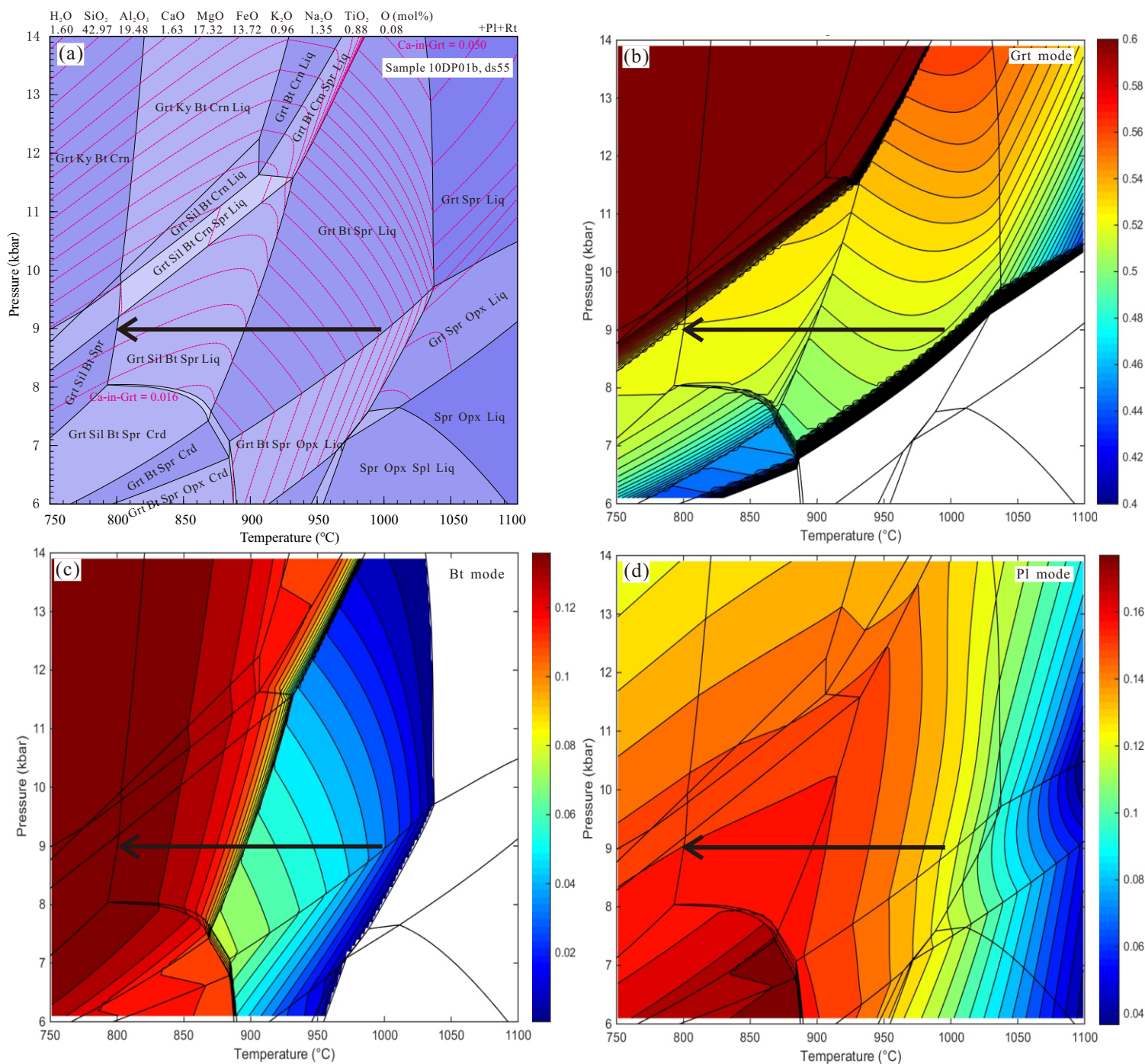


Fig. A4 (a) P - T pseudosection calculated based on the bulk composition of sample 10DP01b. Isopleths of Ca-in-Grt ($= \text{Ca}/(\text{Ca} + \text{Mg} + \text{Fe}) \approx \text{Grs mol.}\%$) in the range of 0.016-0.050 are shown. The interval is 0.002. (b) Change of Grt mode. (c) Change of Bt mode. (d) Change of Pl mode. The interpreted retrograde P - T path from Jiao and Guo (2020) is shown.

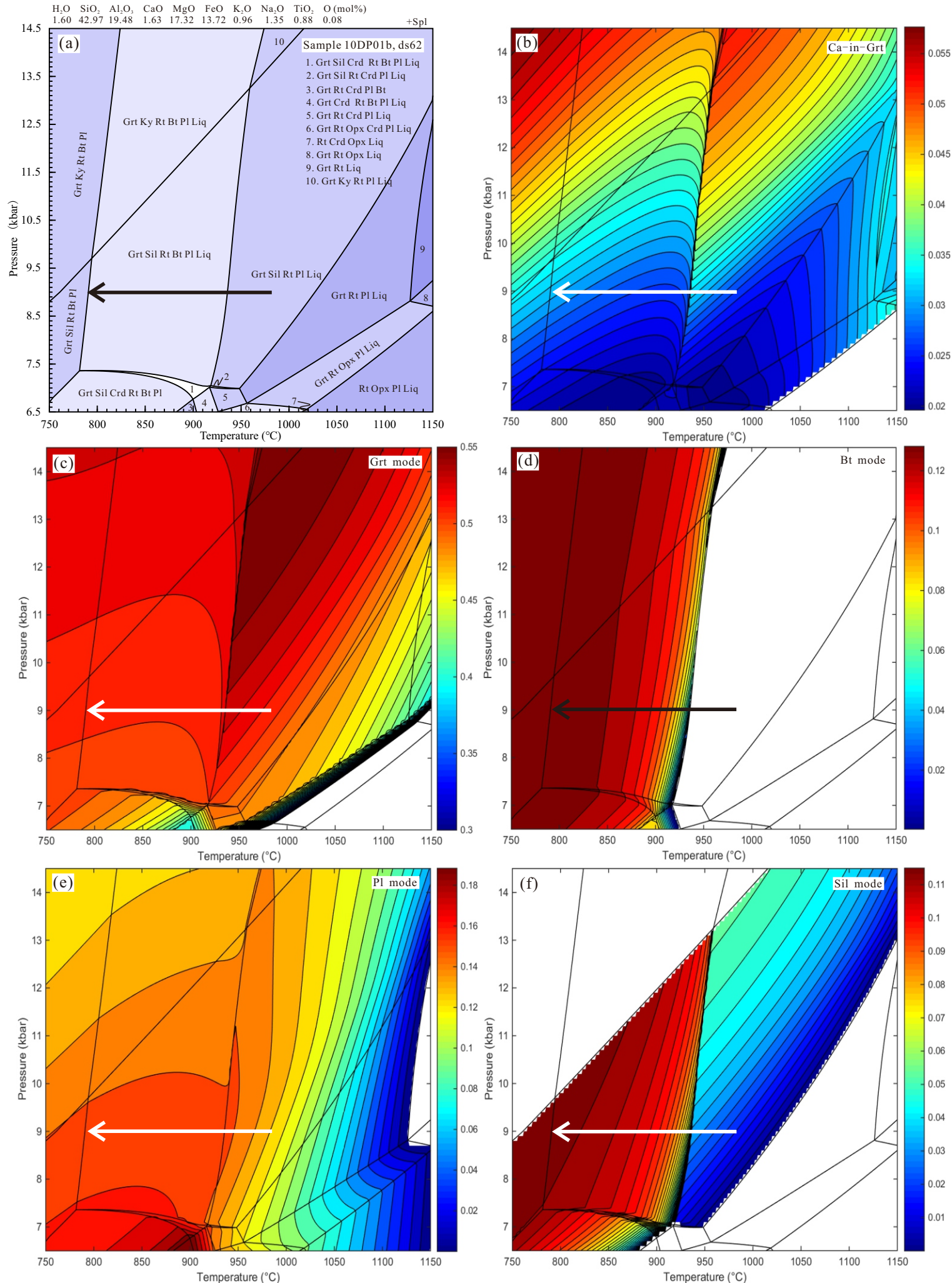


Fig. A5 (a) *P-T* pseudosection calculated based on the bulk composition of sample 10DP01b. (b) Change of Ca-in-Grt (= Ca/(Ca + Mg + Fe) Grs mol.%) . (c) Change of Grt mode. (d) Change of Bt mode. (e) Change of Pl mode. (f) Change of Sil mode. The interpreted retrograde *P-T* path from Jiao and Guo (2020) is shown.