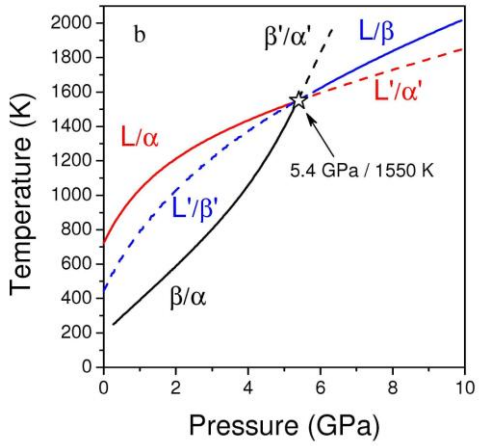
Thermodynamically consistent p-T phase diagram of boron oxide

Contexte et verrou scientifique :

Although boron oxide B_2O_3 is an archetypical glass-forming substance of large industrial and fundamental importance, its phase diagram remained controversial by now. In the present work, the p-T phase diagram of B_2O_3 has been constructed based on *in situ* experimental data up to 8 GPa and 1900 K and thermodynamic analysis.



Equilibrium phase diagram of B_2O_3 to 10 GPa and 2000 K: calculated stable and metastable equilibria from 0 K to melting temperatures

Résultats obtenus : The proposed phase diagram represents only thermodynamic equilibria between crystalline (α, β) and liquid states, not influenced by kinetic phenomena.

Domaine scientifique et d'application : High-pressure Physical Chemistry and Material Science

Partenaires académiques et industriels : IMPMC, Université P&M Curie; Institute for High Pressure Physics, RAS

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