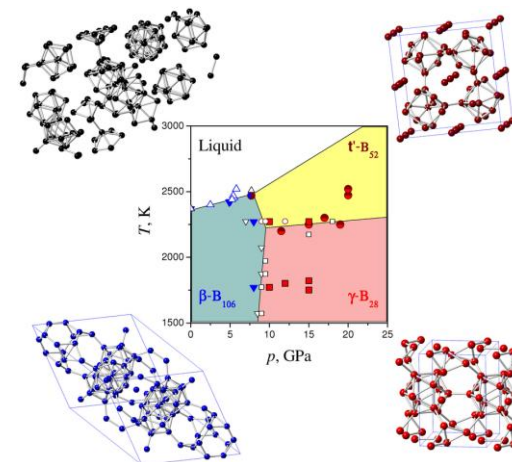


## Equilibrium p-T phase diagram of boron

### Contexte et verrou scientifique :

Solid-state phase transformations and melting of boron have been *in situ* and *ex situ* studied at pressures to 20 GPa in the 1500-2500 K temperature range, and the equilibrium phase diagram has been constructed. The high-temperature part of the diagram contains p-T domains of thermodynamic stability of rhombohedral  $\beta$ -B<sub>106</sub>, orthorhombic  $\gamma$ -B<sub>28</sub>, pseudo-cubic (tetragonal) t'-B<sub>52</sub>, and liquid boron (L). The positions of two triple points have been experimentally estimated, i.e.  $\beta$ -t'-L at ~8.0 GPa and ~2490 K; and  $\beta$ - $\gamma$ -t' at ~9.6 GPa and ~2230 K.



**Résultats obtenus :** A long lasting enigma of boron – an element with unpredictable allotropism – has been resolved, and unknown equilibrium phase diagram has been constructed.

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

**Partenaires académiques et industriels :** IMPMC, Université P&M Curie

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