

TANIGUCHI LAB.

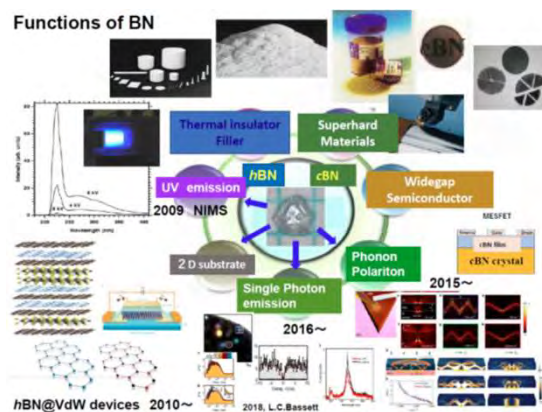
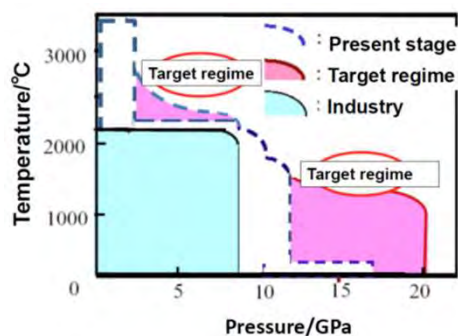
[Materials Science]

Guest Chair for Advanced Interdisciplinary Modeling

High Pressure Crystal Growth

One strong motivation for the application of high-pressure synthesis techniques in materials research is the supply of functional materials for engineering needs, such as diamonds. At the same time, realizations of unknown properties of new materials would be significant for exploring new functional materials under high pressure. Extending the simple methodology of obtaining a recoverable high-pressure phase, viewing it as a stage for chemical reaction processes is intriguing, where the reaction may be difficult to achieve at standard pressure synthesis. For instance, high-pressure synthesis is conducted in a closed environment; hence, reactive reagents and volatile substances, which are challenging to use at normal pressure, can then be used as a solvent for crystal growth.

The guest chair for advanced interdisciplinary modeling carried out experimental study on diamond and related materials as new functional materials with the concept for high pressure condition as above-mentioned promising fields. Figure shows belt-type high pressure apparatus, their potential of high-pressure synthesis conditions, and new functions of boron nitride materials in the variety of field initiated by obtaining high quality BN crystal under high pressure. Major aim in this subject is to development of high-pressure technique useful for exploration of new functional materials.



Belt-type high pressure apparatus, synthesis conditions, and variety functions of boron nitride crystals.