



東京大学微細構造解析プラットフォーム 公開講演会

“Advanced High Pressure Nitrides”

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The technological progress continuously calls for advanced materials with enhanced properties for technical applications. The main families of inorganic solids having a great variation of physical and chemical properties, which are explored and, accordingly, extensively used today, are oxides or wider determined - oxygen-based compounds. Therefore, the majority of studies in materials chemistry and physics are focused on oxides, which are nowadays the most comprehensively characterized group of inorganic compounds. However, they do not always cover the current technological needs. Accordingly, there are growing efforts to find new oxygen-free compounds satisfying the technological requirements and to develop economical methods of their production and manipulation. The most promising candidates for that are inorganic nitrides and related materials. Inorganic nitride-based materials have recently been recognized as novel functional materials with unique combination of physical, chemical, electrical, optical and mechanical properties with enormous technological potential and impact in emerging application areas including microelectronics, optoelectronics, coatings, sensors, light-emitting diodes, solid-state lasers, power switches, and high temperature packing. However, in contrast to oxides, the fundamental scientific issues and the properties in different types of nitrides have not been adequately addressed yet. Moreover, the solid state chemistry of nitrides has been attracted less attention if compared to that of solid oxides, although there has been considerable activity in the area over the past two decades. Even less is known about mixed N_3 -anion systems such as oxynitrides, carbonitrides, etc. which are proposed to possess properties of great technological importance. In the present contribution, advanced functional nitride-based materials synthesized under high pressure and high temperature conditions are discussed with a special focus on structural and functional properties.

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**Main meeting room at Institute of Engineering Innovation, UT
(工学部総合研究機構 9号館1階 大会議室)**

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