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### **Shock Syntheses of Novel Nitrides and Biomolecules**

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High-pressure spinel nitride of  $\text{Si}_3\text{N}_4$  was discovered more than 10 years ago. Since then there have been many studies on the spinel nitrides and related materials including oxynitrides. We have developed shock synthesis method to investigate their structural, mechanical, chemical, physical, and optical properties. At the same time we tried to synthesize carbon nitrides from the organic substances. And later we extended to shock synthesis of ammonia through the Haber-Bosch reaction under shock in order to apply geochemical subjects related to the origin of life. The simplest amino acid of glycine, as well as amines (up to propylamine) and carboxylic acids (up to pentanoic acid), has been synthesized successfully in aqueous solutions through meteoritic impact reactions. Recently we are trying to make more complex biomolecules for implications of biomolecule formation for the origin of life through meteorite impacts on early Earth's ocean. These results of shock syntheses may imply significant contributions to materials science and Earth and planetary sciences. This research is collaborated with National Institute for Materials Science and Tohoku University.