

Super-Strained Photocatalysts by High-Pressure Torsion

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There are now high demands to shift the activity of photocatalysts from the UV light region to the visible-light region. Moreover, there are significant activities to produce new photocatalysts from nature-friendly materials and minerals. Although chemical methods are mainly used to tailor the photocatalyst, we use a mechanical method to produce new photocatalysts. In this method, which is called high-pressure torsion (Fig. 1), severe strain is induced in the material under several Giga-Pascal Pressure. As a result, several microstructural and structural modifications such as introduction of high-pressure phases and vacancies occur which subsequently lead to enhanced photocatalytic activity. In this talk, some new findings on the application of the HPT method to TiO_2 , ZnO , Al_2O_3 , oxynitride and perovskite photocatalysts are reviewed.

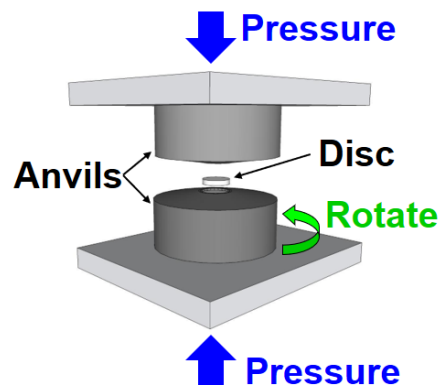


Fig. 1. Schematic illustration of high-pressure torsion (HPT) method.