

PRIORITIZED THEME / TECHNOLOGY THEME

Development of novel catalysts with unique electronic structure for the synthesis of green ammonia, urea and its derivatives

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Summary :

In order to construct a green ammonia process that synthesizes ammonia from hydrogen derived from renewable energy, it is critical to develop a new catalyst that works at low temperatures and low pressures, keeping high activity.

In this project, we tackle this objective with a new electride-based catalysts, and introduce a new ammonia synthesis process that contributes to the reduction of CO₂ emissions. A catalytic process for synthesizing nitrogen fertilizers (urea and its derivatives) on-site from green ammonia is also studied from novel catalysts based on quantum materials.

