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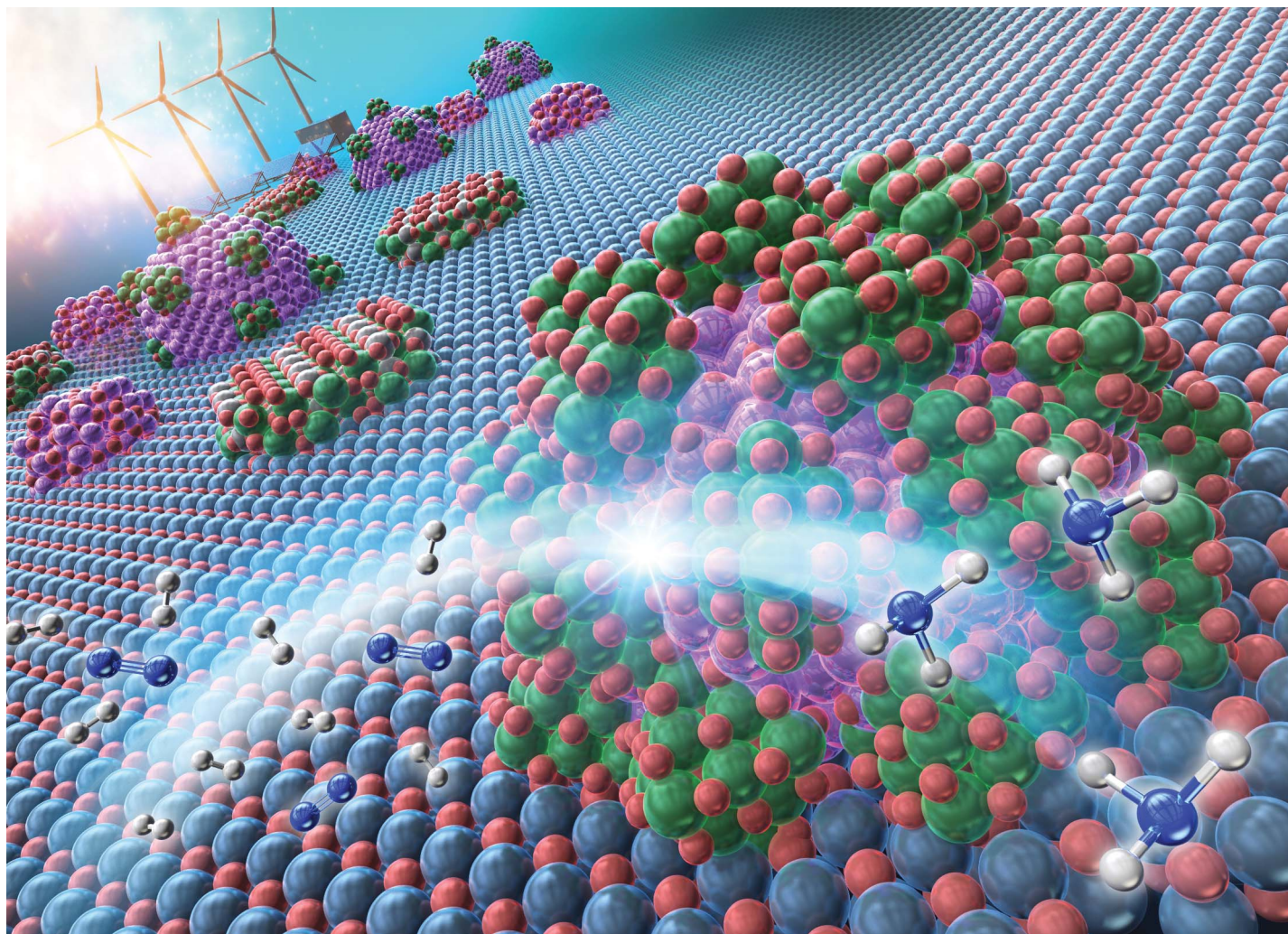
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Showcasing research from Professor Katsutoshi Nagaoka's laboratory, Graduate School of Engineering, Nagoya University, Nagoya, Japan.

Barium-doped iron nanoparticles supported on MgO as an efficient catalyst for ammonia synthesis under mild reaction conditions

Encapsulation of Fe nanoparticles by BaO achieves significant ammonia synthesis activity under mild reaction conditions. High temperature reduction induces the accumulation of BaO clusters over Fe nanoparticles. A strong electron donation from this BaO cluster *via* Fe facilitates the cleavage of the dinitrogen triple bond, the rate-determining step in ammonia synthesis. This discovery will contribute to the development of a low-cost ammonia synthesis catalyst that will lead to the realisation of a carbon-neutral society.

As featured in:



See Katsutoshi Sato, Katsutoshi Nagaoka *et al.*, *Sustainable Energy Fuels*, 2024, 8, 2593.