



A Route to Store Off-peak Energy: New Hydrogen Storage Materials and Synthetic Strategy to Optimize Hydrogen Adsorption

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ABSTRACT.

Storing hydrogen produced from power plants using off-peak electricity is a challenging problem in hydrogen economy. This research proposal addresses a new synthetic strategy to enhance H₂ binding energies of nanoporous hydrogen storage materials by incorporating coordinatively unsaturated metal centers. These nanoporous frameworks will be excellent platforms for combinatorial search of the metals suitable for hydrogen adsorption. Our preliminary data show exceptional H₂ uptake results, and further study on these materials will provide new chemical insights for next-generation hydrogen storage materials.