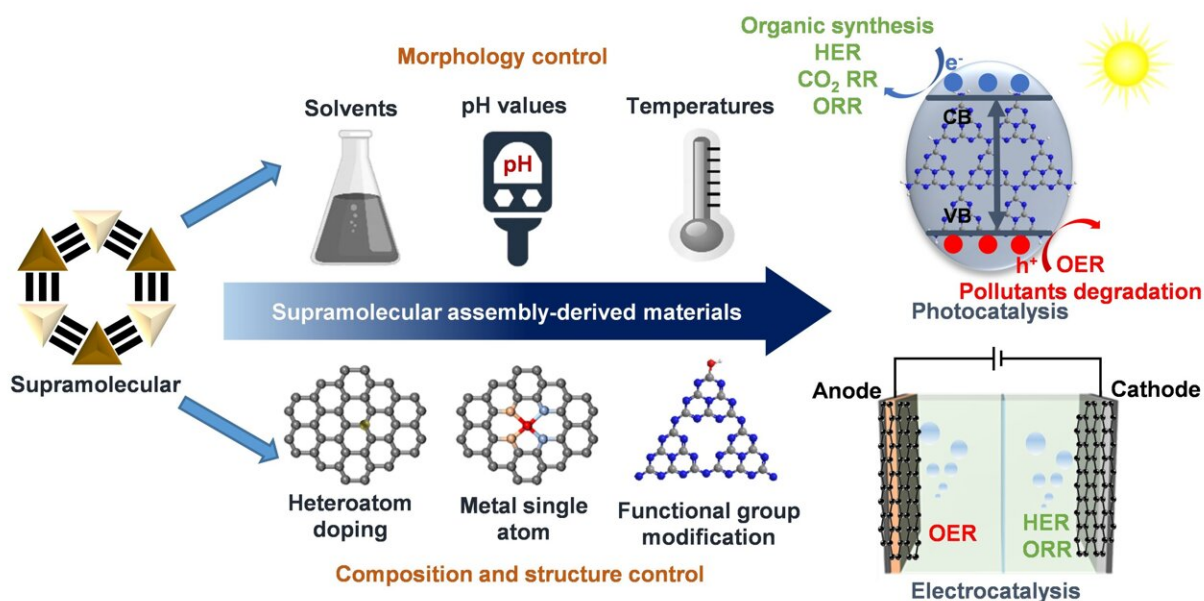


Supramolecular assembly assists the synthesis of highly active carbon-nitrogen-based photo/electrocatalysts

February 17 2023



The morphology, composition and structure regulation of supramolecular derived carbon-nitrogen-based materials, as well as their applications in photo/electrocatalytic reactions. Credit: Science China Press

In a paper published in the journal *National Science Open*, the morphology and structure regulation methods of supramolecular assembly are summarized. Then, recent progresses of supramolecular assembly derived carbon-nitrogen-based materials for

photo/electrocatalysis are discussed. Furthermore, the developments and challenges in future are prospected.

The sustainable energy storage and conversion technologies based on redox reactions are promising pathway to solve [energy issues](#). However, there is still lack of low-cost, ecofriendly and highly active photo/electrocatalysts, which play a crucial role in the [redox reactions](#).

In this review, the author first summarized the effects of temperature, solvent type, pH value and monomer on the morphology and structure of the supramolecular assembly. Then, the effects of morphology and structure regulation on the physicochemical properties of supramolecular assembly-derived carbon-nitrogen-based materials were discussed, which determined the essential properties of catalysts for a specific photo/electrocatalytic reaction.

Recent progresses of the supramolecular derived carbon-nitrogen-based materials for photo/electrocatalytic applications are also summarized, including water splitting, CO₂ reduction, oxygen reduction reaction, pollutant degradation, organic synthesis, etc.

Finally, they pointed out that the preparation of task specific photo/electrocatalysts guided by the structure-activity relationship are highly desirable in the future. At the same time, exploring the original supramolecular assemblies with unique optical and [electrical properties](#) is also appealing.

More information: Fanglei Yao et al, Supramolecular assembly-derived carbon-nitrogen-based functional materials for photo/electrochemical applications: Progress and challenges, *National Science Open* (2022). [DOI: 10.1360/nso/20220032](https://doi.org/10.1360/nso/20220032)

Provided by Science China Press

Citation: Supramolecular assembly assists the synthesis of highly active carbon-nitrogen-based photo/electrocatalysts (2023, February 17) retrieved 24 May 2024 from <https://phys.org/news/2023-02-supramolecular-synthesis-highly-carbon-nitrogen-based-photoelectrocatalysts.html>

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