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Emerging bioinspired hydrovoltaic electricity generators

Hydrovoltaic Electricity Generators (HEGs) are emerging green energy harvesting devices that have gained significant attention in recent years. They generate electricity through direct interactions between nanomaterials/nanostructures and various forms of water (e.g., moisture, liquid, waves, droplets), converting diverse energy sources in water into electricity. This review precisely defines, reasonably categorizes, and systematically summarizes the development of bioinspired HEGs, offering a comprehensive analysis based on their level of bioinspired intelligence: from elementary bioinspired materials to smart bioinspired structures and living bioinspired devices.

As featured in:



See Cheolmin Park *et al.*,
Energy Environ. Sci., 2025, **18**, 53.