**Title: 2D Reticular Organic Frameworks to Precisely Functionalize Electrodes for Sustainable Energy Storage**

**Abstract:** 2D organic frameworks (COFs, COPs, CTFs, Graphyne-n=1,2,3..) are a special class of organo-polymers featuring interconnected organic π-stacking monomers, resulting in well-defined periodic and porous architectures. Our designed strategy incorporates multiple redox-active functionalities into their structures starting from the building blocks or through post-functionalization, expanding the scope of pore-surface engineering, and exhibiting tunable electronic properties. This approach enables us to fabricate excellent surface-functionalized electrodes for electrochemical energy storage, resembling heteroatom-doped graphitic materials but with additional control over precise structural properties. Undoubtedly, reticular organic chemistry empowers the creation of these materials, enhancing charge storage and ion diffusion through their well-organized porous structure. Molecular-level tuning of energy levels and consequently band structure determines the charge storage within specific potential windows and facilitates charge transfer. Taking advantage of the structure-property control of such materials in designing electrodes, we recently constructed some innovative energy storage systems, such as economical, sustainable, and fast-charging Supercapattery (supercapacitor + battery) and novel Metal-Organochalcogenide batteries (M-OrX: M= Li, Al, and X= S, Se). The tunable band structure, band gap engineering, and excellent hole and electron mobility within structural units might also create a platform to construct a photocathode for a photo-rechargeable battery that does not require charging via plug-in electricity. We also aim to explore the fascinating world of ultrafast quantum ion-computing systems by precisely utilizing well-defined pore sizes of such frameworks-electrodes to construct capacitive intronic and ionologic gates. Despite promising features, a gap remains between theoretical prediction and practical implementation, crucial for scalable, dependable sustainable electrode developments. Bridging this disparity involves refining on-surface growth of 2D films of organic framework with precise ordering for electronic conduction and charge transfer, and meticulous processing for device implementation. A comprehensive understanding of fundamental mechanisms is essential for future customized design of such organo-polymer-based energy storage. The success of this new research dimension pivots on inspiring and motivating young scientific minds toward organic green energy storage for creating a sustainable world. Cultivation of young talent through hands-on laboratory work and classroom teaching, focused on generating innovative ideas, will aid practical implementation. To facilitate this, two new courses could be proposed: A) Chemical Innovations for Renewable Energy Solutions (Undergraduate) and B) Functional Organic Materials for Sustainable Energy Storage (Postgraduate) in addition to the existing curriculum aims to shape and empower the next generation of scientists for the future broadening of this new research field.

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