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Solid State-Supported Porphyrins and Phthalocyanines as Catalysts and Photocatalysts

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Message from the Guest Editor

The applications of porphyrins, phthalocyanines, and related macrocycles are intensively studied in many fields. Porphyrinod macrocycles resemble naturally occurring porphyrins and derivatives in both structure and function, and their catalytic and photocatalytic properties are constantly investigated. Porphyrinoids may be used to mimic the activity of cytochrome P450 in selective oxidation of organic molecules, leading to valuable chemicals. As a more robust approach, they could be investigated as a tool for water treatment through the oxidative decomposition of organic pollutants. Upon illumination with light, certain macrocycles may generate reactive oxygen species, including singlet oxygen, which further extends the scope of the catalytic activity. Apart from oxidation reactions, the catalytic activity of porphyrinoid macrocycles also involves the formation of cyclic carbonates from epoxides or coupling reactions of diazo compounds.

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