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Functional materials from living organisms

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From the perspective of a synthetic chemist, several living organisms can be envisioned as a plentiful source of micro/nano structures, polymers and molecules useful to access smart functional nanomaterials for photonics, electronics and biomedicine.

Differently from the industrial production, biosynthesis of materials occurs in mild conditions and in the absence of toxic reagents. This approach may open the way to

biotechnological sustainable large scale production of functional nanomaterials for biomedicine.

Biosilica, cellulose, lignin, polydopamine, silk are some examples which will be considered in the lecture.

The opportunities and the limits of this approach will be discussed, pointing out possible future directions.

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