UNIVERSITÀ DEGLI STUDI DI TRIESTE | DSCF Dipartimento di Scienze Chimiche e Farmaceutiche

CONFERENCE ANNOUNCEMENT

On WEDNESDAY JANUARY 22nd 2025,

At **10:00**, in the **SALA DEL CONSIGLIO (I floor)**

of the DEPARTMENT OF CHEMICAL AND PHARMACEUTICAL SCIENCES,

University of Trieste, Build. C11, Via Giorgieri 1

Prof. Markus Antonietti

Max Planck Institute of Colloids and Interfaces, Potsdam, Germany, will give a conference entitled:

New porous organic materials for disruptive Electrocatalysis and Energy storage

The Department Director

Prof. Paolo Tecilla

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New porous organic materials for disruptive Electrocatalysis and Energy storage

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A key feature of the current transition from a fossil based energy system to a carbon neutral, fully sustainable mode of operation is energy conversion and storage. There is strong leadership in EU countries, and Australia, but the intermittent Nature of Sustainable Energy without co-inventing novel storage concepts restricts its relative contribution to about 50 %, taken Germany as a typical case. This is why energy-to-chemicals schemes ("electrocatalysis") or fundamentally new, denser and more affordable electron storage devices are eagerly needed. I will report in this presentation first on new, noble Carbons and COF-like, ionic Carbon Nitrides with extreme stability. These systems directly enable cocatalyst-free new electrocatalysis and new electrode constructions. Due to the positive work-function the new versions are remarkably suitable for single atom deposition and thereby represent a key step to extend the electronegativity and reactivity range of known metals ("making Ni to act as Pd"). Here I report for instance on direct H_2O_2 synthesis and methane mono-oxidation by solar photochemistry. In electric energy storage, I will present the use of these systems for new, save metal anodes, for solid-state sulphur cathodes. If time allows, I will also report on a new, record breaking "Nitrogen-battery", where we ideally can story 8 electrons per nitrogen atom.

Markus Antonietti is Director of the Max Planck Institute of Colloids and Interfaces and has contributed with about 1000 papers to the field of material/polymer chemistry in the last 20 years. His work was appreciated with a number of honours, and his current work is cited about 14000 times/year, with an H-index of 217. He is also an amateur chef of fusion cuisine and is playing in a rock band.