

AVVISO DI SEMINARIO

Lunedì 4 luglio 2016 ore 15:30

nell'Aula "Grassano" del Dipartimento di Fisica

Michael J. Aziz

Gene and Tracy Sykes Professor of Materials and Energy Technologies

Harvard School of Engineering and Applied Sciences

terrà un seminario dal titolo

Organic Aqueous Flow Batteries for Massive Electrical Energy Storage

Proponente: Prof. Silvia Licocchia



Organic Aqueous Flow Batteries for Massive Electrical Energy Storage

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Harvard School of Engineering and Applied Sciences, Cambridge, MA 02138 USA

The ability to store large amounts of electrical energy is of increasing importance with the growing fraction of electricity generation from intermittent renewable sources such as wind and solar. Solid-electrode batteries are drained far too soon, when discharged at their rated power, to economically fill the gaps in photovoltaic or wind temporal power profiles. Flow batteries show promise because the designer can independently scale the power (electrode area) and energy (arbitrarily large storage volume) components of the system by maintaining all electro-active species in fluids. Wide-scale utilization of flow batteries is limited by the abundance and cost of these materials, particularly those utilizing redox-active metals such as vanadium or precious metal electrocatalysts. We have developed high performance flow batteries based on the aqueous redox behavior of small organic molecules such as quinones. The redox active materials can be very inexpensive and exhibit rapid redox kinetics and long lifetimes. This new approach should enable massive electrical energy storage at greatly reduced cost.