

Marie Curie PhD position in Milano

PhD in Physics at Politecnico di Milano

- Submission deadline: **mid-March**; Start date: May 2017
- 3 year PhD, **€3000/month** net salary
- Participation in dynamic 14-member European team
- Supervisor **Dr. Shane Eaton** shane.eaton@gmail.com
- **Requirements:** Related Masters degree in past 4 years, lived outside of Italy for more than 2 of the last 3 years



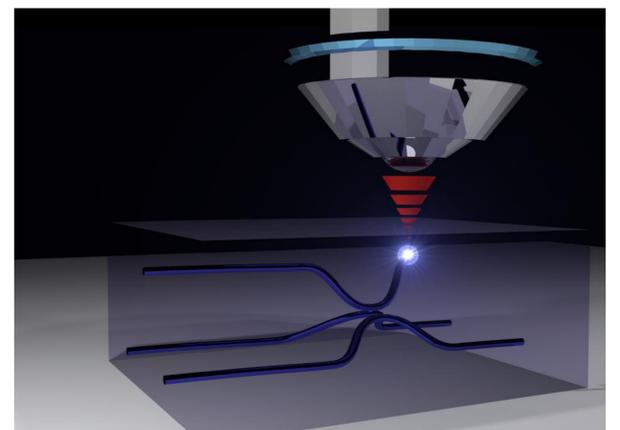
Marie Skłodowska-Curie
Actions



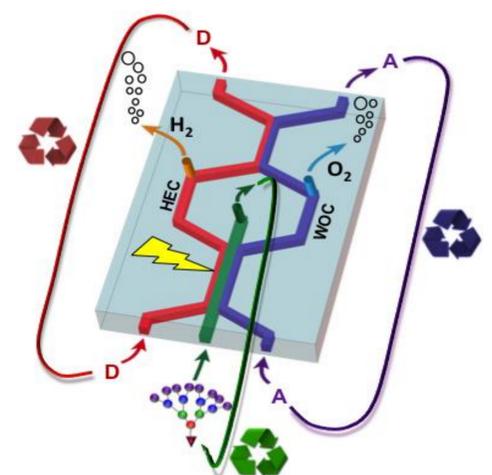
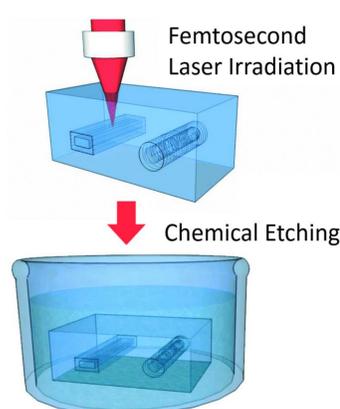
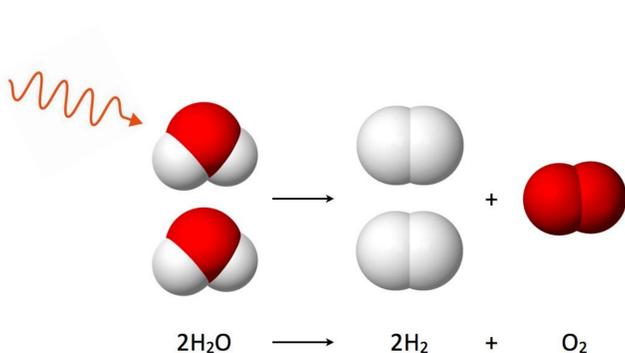
Great food and drink in the most vibrant Italian city, studying at Italy's best engineering university

Femtosecond laser nanofabrication

- **Focused femtosecond laser pulses are nonlinearly absorbed in transparent materials** due to their high peak intensity
- **3D:** Highly localized modification only at the focus, enabling **3D microfabrication**
- **Modalites:** buried optical waveguides, surface laser ablation, 3D printing of microstructures in photoresists



PHOTORAIN project: Femtosecond laser writing of microchannels in glass for clean energy



Photocatalysis splits water using sunlight, directly producing a **solar fuel** by storing solar energy in the chemical bonds of H_2 and O_2 , which can be used to power next generation fuel cells.

Femtosecond laser microfabrication will be used to form buried and surface microchannels in glass, to engineer **tangential laminar flows** which do not mix.

This will enable **microfluidic interfaces** with reversible organization of functional pigments into photosynthetic architectures in which vectorial photoinduced energy- and electron-transfer processes yield long-lived charged species in different **heterogeneous liquid phases**.

Vis-adsorbing chromophores undergo self-assembly at the two interfaces, in which antenna molecules fuel donor and acceptor electron mediators. Sensitized D^* and A^* then **react independently** with the **catalysts**. Splitting of the flows causes disassembly of the interfacial organization, restoring the photoactive species, enabling their **clean recycling**.