



UNIVERSITÀ DEGLI STUDI  
DI PERUGIA

## **AVVISO DI SEMINARIO**

nell' ambito del ciclo: *"La Ricerca nel Dipartimento  
presentata dai Giovani Ricercatori"* – A.A. 2014/2015.

**Mercoledì 08 Aprile 2015 - ore 15:00**  
aula "A" - 1° piano edificio di Via Pascoli

**Dr. Marie Plazanet**

Dipart. Fisica e Geologia, Univ. di Perugia

### ***"Nafion®: from fuel cells applications to the physics of confined electrolytes"***

**Abstract:**

Nafion® is an amphiphilic polymer made of fluorated chains carrying hydrophilic sulfonate anions. It is widely used in various applications, for which the most famous is the use as proton conducting membranes in fuel cells. Its useful properties, related to the water structure and dynamics, are the result of a complex polymer organization in which the hydrophilic side chains are organized to form a percolating network of channels and cavities of nanometer size. These are filled with – unusually behaving – water upon hydration.

Below 0°C, water desorption and ice formation can be observed down to ~200 K. The phenomenon is reversible, so that water transport and ice melting can be observed at unusual temperatures.

Combining several experimental techniques, including non linear optical spectroscopy and neutrons diffraction, we could quantitatively explain the data in considering both entropic and confinement effects. The phenomenon may be general to most confined electrolytes, however rarely observed due to the restrictive conditions required.

**Tutti quanti gli interessati sono cordialmente invitati a partecipare.**

**Il Coordinatore del Ciclo di seminari**  
*Prof. Lucio Cerrito*

N.B.: per aggiornamenti sulla serie, vedi: Tutti i Seminari del Dipartimento  
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