



UNIVERSITÀ DEGLI STUDI  
DI PERUGIA

**DOTTORATO DI RICERCA**  
**SCIENZA E TECNOLOGIA PER LA FISICA E LA GEOLOGIA**

## **Short Course on Geochemistry of hydrothermal fluids**

**given by Giovanni Chiodini, Stefano Caliro, Zaccaria Petrillo (INGV)  
and Francesco Frondini, Carlo Cardellini (Università di Perugia)**

**30 May – 1 June 2006**

The short course is divided into three days (corresponding to 3 credit points) of lectures with the aim to provide an up to date and modern knowledge on the investigation of hydrothermal systems in the framework of volcanic surveillance, geothermal prospection and of the investigation of the Earth degassing process.

The short course is meant for PhD students. There are no registration fees. However, participants have to organize their travel and stay in Perugia.

For additional information and registration please contact Carlo Cardellini ([carlo.cardellini@unipg.it](mailto:carlo.cardellini@unipg.it))

### **Topics of the short course**

1. Volcanic and hydrothermal environments
2. The conceptual model of hydrothermal systems
3. Origin of the fluids (examples from active volcanoes and non-volcanic regions)
4. Gas geoindicators of temperature, pressure, redox conditions (the  $\text{H}_2\text{O}-\text{CO}_2-\text{H}_2-\text{CH}_4-\text{CO}$  gas system)
5. Solute geochemistry and geothermometers
6. Measuring  $\text{CO}_2$  fluxes and thermal energy released by hydrothermal systems and regional estimation of  $\text{CO}_2$  flux and advective heat flux
7. From conceptual to physico-numerical models (TOUGH2 geothermal simulator)
8. Geochemical evidences of episodes of magma degassing at quiescent volcanoes
9. Dynamics of hydrothermal systems and ground deformation
10. The current volcanic unrest at Campi Flegrei

Lectures will be given from 9:00 to 13:00 and from 14.30 to 17:00 at the Department of Fisica e Geologia, Geologia building, Piazza Università, Perugia.