INSTYTUT NAUK GEOLOGICZNYCH
POLSKIEJ AKADEMII NAUK

INSTITUTE OF GEOLOGICAL SCIENCES
POLISH ACADEMY OF SCIENCES

00-818 Warszawa, ul. Twarda 51/55 tel. (+48 22) 697-87-00; fax (+48 22) 620-62-23; e-mail: atlab@twarda.pan.pl; http://www.ing.pan.pl

Zaproszenie

do udziału w warsztatach naukowych pt.:

Elements and isotopes in the analyses of extraterrestrial and terrestrial materials

organizowanych w ramach projektu ATLAB w dniach 3-5.04.2012

Szanowni Państwo,

Uprzejmie zapraszamy do udziału w pierwszym z serii warsztatów naukowych przygotowanym w ramach pakietu WP5, zadanie T5.3 „Science for Knowledge").

Cel warsztatów: Zaznajomienie uczestników z najnowszymi metodami badań geochemicznych materii ziemskiej i pozaziemskiej ze szczególnym uwzględnieniem technik analizy izotopowej. Ukazanie użyteczności wiedzy geochemicznej dla odtworzenia procesów powstawania i ewolucji układu słonecznego, jego składowych. Poszerzenie wiedzy na temat szczególnie interesujących epizodów tej ewolucji, o szczególnym wpływie na ewolucję geosystemu jak np. LHB i związanego z nim zagadnienia pochodzenia wody na Ziemi. Przedstawienie zagadnień związanych z badaniami meteorytów jako nośników informacji o ewolucji układu słonecznego.

Zaproszeni wykładowcy są wybitnymi specjalistami z ośrodków naukowych:
Francji:
Dr Marc Chaussidon (Directeur de Recherche CNRS, Centre de Recherches Petrographiques et Geochemiques, Nancy),
Dr Allessandro Morbidelli (The Observatoire de la Côte d'Azur; OCA, Côte d'Azur Observatory, Nicea),
i Niemiec:
Dr Jörg Fritz (Museum für Naturkunde, Leibniz-Institut für Evolutions- und Biodiversitätsforschung an der Humboldt-Universität zu Berlin, Niemcy)
Dr. Urs Mall (Max-Planck-Institut für Sonnensystemforschung, Katlenburg-Lindau, Niemcy)

Miejsce spotkania:

Sala Konferencyjna ING PAN (6 piętro); ul Twarda 51/55, 00-818

Organizatorzy:
prof. dr hab. Ewa Słaby,
dr Joanna Gurgurewicz,
dr hab. Joanna Mirosław-Grabowska

Liczba uczestników: 30 osób

SEVENTH FRAMEWORK PROGRAMME

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Agenda

Elements and isotopes in the analyses of extraterrestrial and terrestrial materials

Wtorek, 3.04.2012

9.00-9.30 Rejestracja uczestników

9.30 Otwarcie warsztatów – Prof. dr hab. Marek Lewandowski i Prof. dr hab. Ewa Słaby

Sesja poranna 10-12:
Lecture 1: Isotopic analysis by ion microprobe and applications to Earth and planetary sciences.
– **Dr Marc Chaussidon**
Lecture 2: Oxygen and Nitrogen isotopic composition of the Sun.
– **Dr Marc Chaussidon**

Przerwa obiadowa 12.00-13.00

I Sesja popołudniowa 13-14.30
Lecture 3: Short-lived radioactive nuclides and the origin of the Solar system: the case of 26Al.
– **Dr Marc Chaussidon**
Lecture 4: Planetary fragments in meteoritic chondrules?
– **Dr Marc Chaussidon**

Przerwa kawowa 14.30-15.00

II Sesja popołudniowa: 15.00-16.30
Lecture 5: Reconstruction of Precambrian paleotemperatures from O and Si isotopic compositions of cherts.
– **Dr Marc Chaussidon**
Lecture 6: Vital effects for oxygen and boron isotopes in coral and implications for paleotemperatures.
– **Dr Marc Chaussidon**

Środa, 4.04.2012

Sesja poranna 10.30-12

Lecture 1: The Moon after Chandrayaan-1.
– **Dr Urs Mall**
Lecture 2: New models of planetesimal formation.
– **Dr Alessandro Morbidelli**

Przerwa obiadowa 12.00-13.00

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I Sesja popołudniowa 13-14.30

Lecture 3+4: The early phases of the solar system: migration of the giant planets in the disk of gas and accretion of the terrestrial planets.

– **Dr Alessandro Morbidelli**

Przerwa kawowa 14.30-15.00

II Sesja popołudniowa: 15.00-16.30

Lecture 5+6: The late evolution of the solar system: origin of the current structure of the Solar System at the time of the Late Heavy Bombardment of the Moon.

– **Dr Alessandro Morbidelli**

Czwartek 5.04.2012

Sesja poranna 10-12

Lecture 1: Classification of meteorites:
Meteorites present unique samples from a variety of planetary bodies that are either undifferentiated, or differentiated to varying degrees. These meteorites groups are characterised by differences in petrography, bulk elemental and isotopic abundances. In addition these meteorites were later modified by thermal and aqueous alteration on the parent body and by impact processes. Meteorites are the most diverse set of extraterrestrial samples that allow studying the history of our Solar System.

– **Dr Jörg Fritz**

Lecture 2: Celestial mechanics:
Interplanetary dust particles (IDP), meteoroids and asteroids are small rocky bodies that orbit the Sun. The stable orbits of these objects are in addition to collisions affected gravitational and non-gravitational forces. The basic of celestial mechanics are presented. The flux extraterrestrial material to the Earth-Moon system is a combination between a more or less steady flux occasionally punctuated by showers.

– **Dr Jörg Fritz**

Przerwa obiadowa 12.00-13.00

I Sesja popołudniowa 13-14.30

Lecture 3: Shock metamorphism of rock forming mineral:
Hypervelocity collisions drive shock waves into the planetary bodies that produce irreversible deformation in the silicate minerals. The basic physics of shock loading and unloading are described and the typical shock deformations in rock forming silicates are presented. Certain shock metamorphic effects in these minerals are diagnostic for the degree of shock loading. These features present the basis for shock metamorphic classification of meteorites ant terrestrial rocks.

– **Dr Jörg Fritz**

Lecture 4: K/Ar dating and cosmic ray exposure ages:
The K/Ar isotopic system and cosmogenic nuclides allow dating different events in the history of the meteoritic material. K/Ar allows dating thermal events that can either be interpreted as crystallisation or thermal metamorphism by internal processes or impact heating. Petrography of the rocks helps to discriminate between these interpretations. In addition the delivery of meteorites to Earth can be investigated by measuring the isotopes that were produced by interaction of the meteoroid with cosmic rays in space The stable and radioactive cosmic nuclides allow to date the time these meteorites spent as small objects (<10m) in space (space residence time) and the time the meteorites reside on Earth (terrestrial age).

– **Dr Jörg Fritz**

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Przerwa kawowa 14.30-15.00

II Sesja popołudniowa: 15.00-16.30

Lecture 5: Impact ejection of martian and lunar meteorites:
The diverse suite of lunar and martian meteorites recovered on Earth bear testimony of the efficiency to impact ejected solid rock fragments from these planetary bodies and their delivery to Earth. In this lecture, the physics and the efficiency of this process is described. The physical boundary condition regarding shock-pressure, -temperature and -time is recorded by the shock metamorphic features observed on the meteorites. Delivery times of the meteorites are recorded by cosmic ray exposure ages. These boundary conditions are in excellent agreement with numerical models of impact cratering, and orbital evolution of meteoroids in space.

– **Dr Jörg Fritz**

Lecture 6: Impact cratering in the solar system:
The talk aims to show impact crater phenomena were 1) major process that affected the evolution of the planetary bodies in our solar system, 2) provides us with unique samples, and 3) impact crater shapes and sizes-frequency distribution allow to study the structure of the planetary crust and the relative and absolute ages of surfaces.

– **Dr Jörg Fritz**

16.30 Zakończenie warsztatów – Prof. dr hab. Marek Lewandowski i Prof. dr hab. Ewa Słaby