

**SESSION OF TALKS / SESJA REFERATOWA**  
***RESEARCH OF PLANETS AND ASTEROIDS***

*01 June 2022, 11:00 am – 2:45 pm*

*Collegium Geologicum UAM*

*Krygowskiego 12, Poznań; room 61*

**DESCRIPTIONS OF TALKS / OPISY WYSTĄPIEŃ**

***Energy Sources Powering Planetary Dynamos***

**Jung-Fu “Afu” Lin<sup>1,2,3</sup>**

<sup>1</sup>Department of Geological Sciences; The University of Texas at Austin; USA

<sup>2</sup>Texas Materials Institute; The University of Texas at Austin; USA

<sup>3</sup>Fulbright Visiting Scholar, Adam Mickiewicz University, Poznań; Poland

Planetary dynamos can generate magnetic fields that protect organisms from harmful cosmic rays, but also reveal significant energy transports in planetary interiors. Knowledge on energy sources powering dynamos is thus crucial in our quest for planetary habitability. In this presentation, I will address the issue using experimental results on thermal transport properties of iron alloys and mantle silicates. These data are modelled to evaluate the magnitude of the heat flux across the core-mantle boundary region and the timing of planetary dynamos. I will expand the discussion to categorize conditions for possible dynamo scenarios of rocky planets and exoplanets.

***Predicting asteroid taxonomic types from multi-filter sky survey data***

**Dagmara Oszkiewicz**

Astronomical Observatory Institute, Adam Mickiewicz University, Poznań

Asteroid taxonomic types are assigned based on visible and near-infrared spectra of those objects obtained typically at ground-based telescopes. Those sort of measurements are only available for a limited number of asteroids (few thousands at most) and cannot be made for a large number of objects in a reasonable time. Therefore multi-filter photometry from various sky surveys is often used to classify asteroids. In this talk I will discuss the reliability of such classifications and compare efficiency of various surveys in predicting asteroid types and estimating their mineralogical content.

## ***Exploring asteroids with Very Large Telescope (VLT)***

**Edyta Podlewska-Gaca**

Astronomical Observatory Institute, Adam Mickiewicz University, Poznań

Asteroid exploration is a key parameter to understanding the nature of the whole Solar System. The use of adaptive optics imaging on VLT opened a new era in asteroid studies. It allowed to characterise the surface features with precision that was reachable only by space missions. This, in turn helped in characterizing the internal structure of the main compositional classes of asteroids which allow us to address entirely new questions regarding the earliest stages of planetesimal formation and their subsequent collisional and dynamical evolution. I will present the main results that were obtained by means of VLT/SPHERE instrument.

## ***Recent volcanism on Mars: from liquid core to hydrothermal processes***

**Bartosz Pieterek**

Institute of Geology; Adam Mickiewicz University, Poznań

Understanding how magma migrates through the Martian interior and within magmatic plumbing systems of volcanic provinces is crucial for the disclosure of the related hydrothermal systems. In this talk, I will present the newest results on the distribution and ages of small volcanoes dispersed within Tharsis that allowed to reconstruct the potential channels for the ascending magma. The relatively young and widespread volcanism in Tharsis has likely resulted in the development of hydrothermal systems in the vicinity of volcanic edifices. As volcanic and related hydrothermal activity in Tharsis are young, the related hydrothermal mineralization might be still likely exposed on the Martian surface and not buried by younger deposits.

## ***Geological conditions and technical capabilities for ore prospecting on Mars***

**Jakub Ciężela**

Institute of Geological Sciences; Polish Academic of Sciences, Research Centre in Wrocław

Cold War between the United States and the Soviet Union fuelled a beautiful and successful race to the Moon in the 1960s. Half a century later, we are at the onset of a new space race to Mars with many more contenders. Only last year, three countries successfully placed their missions to Mars, and the private sector is also joining. One of the major challenges for the future colonization of Mars is access to local resources, especially metals. Although Mars colonization is still a long run, we already have tools to determine what resources and where we can expect on Mars, which will be discussed during this lecture.