



Early Earth and ExoEarths:
origin and evolution of life
Warsaw, Poland | 3-7 April 2017

Conference Programme

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President of Warsaw prof. Hanna Gronkiewicz-Waltz for the patronage of the conference.

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The City Marketing Office (Biuro Marketingu Miasta) for of promotion materials for the conference participants

Conference Programme

April 3rd, Monday

15.00-19.00 Registration in the Pałac Staszica (the location of the conference).

19.00 Ice breaking party in the Pałac Staszica (the location of the conference).

April 4th, Tuesday

8.30-9.00: Opening of Conference – welcome speeches :

Vice-President of the Polish Academy of Sciences : *Paweł Rowiński*

Chair of the COST Action : *Muriel Gargaud*

Director of the Institute of Geological Sciences : *Ewa Słaby*

1) Session WG1-a: Structure and evolution of planetary systems – chaired by *Ewa Szuszkiewicz*

9.00-9.30: *Papaloizou John, UK*: Planet formation and the early evolution of planetary systems

9.30-10.30: 3 CT of 20' each

1) **Bizarro Martin, Denmark**: Mantle differentiation in the aftermath of the Moon-forming giant impact and Hadean geodynamics

2) **Gallet Florian, Switzerland**: Tidal dissipation in rotating low-mass stars and implications for the orbital evolution of close-in planets

3) **Gros Claudius, Germany**: Terrestrial life for habitable oxygen worlds

Coffee Break : 10.30-11.00

2) Session WG1-b: Interior, surface and atmosphere of exoplanets – chaired by *Florian Gallet*

11.00-11.30: *Jørgensen Uffe, Denmark*: Do habitable zone exoplanets have water?

11.30-12.00: *Bolmont Emeline, France*: Habitability around ultra-cool dwarfs

12.00-13.00: 3 CT of 20' each

1) **Noak Lena, Belgium**: Habitable zone limitations for massive rocky planets

2) **Schulze-Makuch Dirk, Germany/USA**: The Challenges of Detecting a Truly *Earth-like Planet*

3) **Grenfell John Lee, Germany**: Effect of cosmic rays on atmospheric biosignatures in Earth-like atmospheres

13.00 - 14.30 lunch break and informal discussion

3) Session WG2-a: Complex molecules in space – chaired by *John Robert Brucato*

14.30-15.00: *Testi Leonardo, Germany*: Complex organic molecules with ALMA: tracing the origin of chemical complexity

4) Session WG2-b: The Prebiotic to Protolife Trajectory – chaired by *Terence Kee*

15.00-16.00: **3 CT of 20' each**

1) **Ashkenazy Gonen, Israel**: Emergence of Native Peptide Sequences in Early Chemical Evolution

2) **Clarke Paul, UK**: Potentially Prebiotic One-Pot Synthesis of 2-Deoxy-D-Ribose

3) **Greiner Andrea, Germany**: Adenosine Monophosphate Catalyzes Molecular Self-Assembly: Temporal Nanoconfined Water as a biochemical reaction vessel

16.00-16.30: coffee break

MC meeting: 16.30-19.30

16.30 Sightseeing old town Warsaw

20.00 informal dinner

April 5th, Wednesday

5) Session WG2-b: The Prebiotic to Protolife Trajectory – chaired by *Gonen Ashkenazy*

8.30-9.00: **Powner Mathew, UK**: System Chemistry: Selection Overcoming Prebiotic Clutter

9.00-10.40: **5 CT of 20' each**

1) **Pross Addy, Israel**: A Roadmap toward Synthetic Protolife

2) **Saladino Raffaele, Italy**: The mechanism of prebiotic meteorite-catalyzed nucleosides formation under proton irradiation

3) **Szymański Jan, UK**: Emergent properties of life-like vesicles produced by a photoinitiated membrane-forming polymerization process

4) **Kee Terence, UK**: Chemical transformations in silica hydrogel media

5) **Monnard Pierre-Alain, Denmark**: Evolution of membrane building blocks and their functions

Coffee Break: 10.40-11.10

5) Session WG3-a: Biogeochemistry: from the origin of life to extreme environments – chaired by Emmanuelle Javaux

11.10-11.40: *Finster Kai, Denmark*: Biogeochemistry: from the origin of life to extreme environments

11.40-12.10: *Amils Ricardo, Spain*: The dark biosphere, metabolic challenges of the subsurface anaerobic world

12.10-13.10: **3 CT of 20' each**

1) **Pohorille Andrew, USA**: Flexible proteins at the origin of life

2) **Kotnik Tadej, Slovenia**: Assessing abiotic HGT as a driver of early evolution

3) **Lopez-Garcia Puri, France**: Exploring microbial life in the multi-extreme environment of Dallol, Ethiopia

13.10 - 14.30 lunch break and informal discussion

6) Session WG4-a: Habitability of Mars – chaired by Akos Kereszturi

14.30-15.00: *Changela Hitesh, China*: Affinities between Abiotic Organic Material from Chondrites and Natural Organic Material from Earth: Disambiguating Potential Biomarkers from Mars

15.00-16.00: **3 CT of 20' each.**

1) **Ciesielczuk Justyna, Poland**: How spheroidal hematite was formed on Mars: an experimental study

2) **Dębniak Krzysztof, Poland**: Water in the past of Ius Chasma (Valles Marineris, Mars): evidence from geomorphological mapping

3) **Kromuszczyńska Olga, Poland**: Water in the past of Hebes Chasma (Valles Marineris, Mars): evidence from landslide deposits' geomorphological investigation

Coffee Break : 16.00-16.30

7) 16.30-18.00: Early Career Investigator Session: 6 CT of 15' each – chaired by Lena Noak

1) **Cornet Yohan, Belgium**: Early eukaryote evolution: microanalyses of remarkable microfossils of the Late Mesoproterozoic–Early Neoproterozoic

2) **Loron Corentin, Belgium**: An exceptionally preserved and diverse assemblage of organic-walled microfossils from the Proterozoic of Arctic Canada.

3) **Sforna Marie Catherine, Belgium**: Metal distribution patterns in modern stromatolites: Keys to understand the fossil rock record

4) **Profitis Eleftherios, Belgium**: Image processing techniques for the autonomous

mineral and pattern identification in planetary exploration

5) **Mazankova Vera, Czech Republic:** FTIR diagnostics of nitrogen-methane atmospheric glow discharge used for a mimic of prebiotic atmosphere

6) **Birski Lukasz, Poland:** The use of TEM and FTIR spectroscopy in isotope research of apatite from Archean Barberton Greenstone Belt.

18.00 - 20.00 poster session (see poster schedule below) + dinner buffet

April 6th, Thursday

8) Session WG3-b: Archean and Paleoproterozoic phosphorous cycle and phosphorite – chaired by *Ewa Slaby*

8.30-9.00: *Albarede Francis, France:* Water in the Earth-Moon system and the early cycle of nutrients

9.00-9.20: *Lepland Aivo, Norway:* Triggers of the first global phosphorite formation two billion years ago

9.20-9.40: *Wirth Richard, Germany:* Microbially mediated apatite nucleation: TEM applications

9.40-10.00: *Giera Alicja, Germany:* Many secrets of Archean apatite – hydrogen isotopic study of apatite from Isua, SW Greenland

Coffee Break : 10.00-10.30

9) Session WG4-b: Solar System Exploration – chaired by *Elias Chatzitheodoridis*

10.30-11.00: *Leszek Czechowski, Poland:* Enceladus subsurface ocean and possible thermodynamic aspects for life there

11.00-11.30: **Pohorille Andrew, USA:** What would constitute evidence for life on icy moons?

11.30-12.30: **3 CT of 20' each**

1) **Kaczmarek Lukasz, Poland:** Can tardigrades theoretically survive on Mars?

2) **Kereszturi Akos, Hungary:** Paleo-environment indicators of Mars – focus points for next astrobiology missions

3) **Losiak Anna, Poland:** Small amounts of ephemeral liquid water in polar regions of Mars

12.30 - 14.00 lunch break and informal discussion

14.00 - 18.00 excursion to The Royal Castle (Old Town) and a summer residence of the last Polish king Stanisław August Poniatowski – Łazienki
19.00 (Wilanów) Conference dinner

April 7th, Friday

10) WG5: “Societal issues in astrobiology” – chaired by *David Dunér*

9.00-9.30: **Waltmathe Michael, Germany:** Beyond the surly bonds of Earth: Religion and the Challenges of Human Space Exploration

9.30-10.00: **Lazcano Antonio, Mexico:** The RNA Word: stepping out of the shadows

10.00-10.40: **2 CT.**

1) **Milligan Tony, UK:** Anxiety about Discovery

2) **Capova Klara Anna, UK:** Astrobiology and Society in Europe today

Coffee Break: 10.40-11.10

11.10-12.30: European Astrobiology Institute discussion and Conference closure

12.30 – 14.00 Lunch

Poster session schedule:

Daszykowski Grzegorz, Poland: PW-Sat2 - Polish student satellite project

Demaret Lucas, Belgium: Raman spectroscopy investigation of fossil fumaroles: from bulk material to crushed powder analysis in preparation for ExoMars 2020

Dessimoulie Lucile, France: Iron isotopes composition of the oceanic lithosphere during fluid-rock interactions

Ferrari Franco, Poland: Is ionizing radiation of cosmic origin (Galactic Cosmic Radiation and Solar Energetic Particles) an obstacle for the exploration of the Solar system by human missions?

François Camille, Belgium: How to date a sedimentary serie: Different approaches to better constrain the diversification of early eukaryotes in Central Africa (Mbuji-Mayi Supergroup, Proterozoic, DR Congo)

Haidău Cătălina, Romania: Preliminary data on the microbial diversity of two underground ice blocks

Holinger Seraina, Netherlands: Studying the Effect of UV-Radiation on Organic Carbon in Meteorites

Hrušák Jan, Czech Republic: Towards theoretical description of state-selected reaction $[\text{CH}_4 + \text{O} \rightarrow \text{CH}_3 + \text{OH}]^+$

Kaźmierczak Józef, Poland: Archean eukaryotes from South Africa: A farewell to some paradigms of precambrian paleobiology?

Krcma Frantisek, Czech Republic: Application of PTR-MS for determination of compounds formed in Titan like gaseous mixtures by electrical discharges

Kruszewski Łukasz, Poland: Coal fires – Titan – interstellar medium – life: what do they have in common? Potential gaseous bio-precursors in burning mining heaps

Laine Pauli, Finland: The evolution and distribution of complex molecules and their implications to the earliest point of life in the Universe (working title)

Letho Kirsi, Finland: Origin of Life - promoting conditions on the early Earth

Lopez-Garcia Puri, France: Microbial eukaryotes in the Merville Cave chemosynthetic ecosystem

Piast Radosław, Poland: Origin of Life and the Phosphate Transfer Catalyst

Roszkowska Milena, Poland: Monitoring of mitochondria activity during desiccation: Is the anhydrobiosis a key to colonization of waterless exoplanets and moons?

Stavrakakis Hector-Andreas, Greece: An electrokinetics concept for handling underground water on Mars

Strbak Oliver, Slovakia: Magnetotaxis and early life forms (Why geomagnetic navigation matters)

Świeżyński Adam, Poland: In search for the deepest philosophical background of contemporary origin of life theories

Tautvaišienė Gražina, Lithuania: Spectroscopic and Photometric Survey of Northern Sky for Exoplanetary Research

Trixler Frank, Germany: Nucleotide Catalysis of Molecular Self-assembly in Mineral Nanoconfinements of Water

Trunec David, Czech Republic: Kinetic model for chemical reactions in $\text{CH}_4\text{-N}_2$ mixture with oxygen containing admixtures for study of prebiotic atmosphere

Žabka Jan, Czech Republic: Anion Chemistry in Titan: systematic studies of the growth and stability of large negative ions

Zalewska Natalia, Poland: Laboratory experiments of Martian Cryogenic processes.