



# The life cycle of cosmic PAHs

Monday 5 Sep.

**9:30-10:25:** Registration and Coffee

## Session 1: PAH formation and destruction - Chair: Alexander Tielens

**10:25** Welcome

**10:30** Small Pieces Make up the Big Story - Opening Lecture Cosmic PAH2022 - **Leen Decin**, *KU Leuven*

**11:00** The Abundance of Polycyclic Aromatic Hydrocarbons Resolved in Nearby Galaxies - **Jérémy Chastenet**, *University of California San Diego*

**11:30** Comparing spatially resolved PAH-SFR and PAH-CO correlations in the galactic environments of M51 - **Ryan Chown**, *University of Western Ontario*

**11:50** An experimental investigation of the reactions of atomic oxygen and nitrogen with benzene, toluene and pyridine as case studies to address the survival of PAHs and PANHs in space - **Nadia Balucani**, *DCBB - Università degli Studi di Perugia*

**12:10** Spectroscopic evidence of low-temperature polycyclic aromatic hydrocarbon formation - **Daniël Rap**, *Radboud University, FELIX Laboratory*

**12:30-13:30** Lunch

**13:30** Theoretical view of PAH and dust processing in the interstellar medium - **Hiroyuki Hirashita**, *Academia Sinica*

**14:10** Studies of PAHs and fullerenes in DESIREE - **Henning Zettergren**, *Stockholm University*

**14:40** Formation, transformation, and destruction of cationic cosmic PAHs driven by VUV radiation - **Ugo Jacovella**, *Université Paris-Saclay, CNRS, ISMO*

**15:00** Cooling dynamics of nitrogen-containing PAH cations (PANHs) - **Suvasthika Indrajith**, *Stockholm University*

**15:20** VUV photoprocessing of aliphatic PAH cations in astrophysical conditions - **Alexandre Marciniak**, *Université Toulouse III / CNRS*

**15:40-16:10** Coffee

## Session 2: PAH spectroscopy from lab to space - Chair: Els Peeters

**16:10** The high-resolution isolated aromatic universe - **Wybren Jan Buma**, *University of Amsterdam*

**16:40\*** Spectroscopic Characteristics of Polycyclic Aromatic Hydrocarbons in Space - **Christiaan Boersma**, *NASA Ames/SJSURF*

**17:10** Linking Characteristics of the Polycyclic Aromatic Hydrocarbon Population with Galaxy Properties: A Quantitative Approach Using the NASA Ames PAH IR Spectroscopic Database – **Alexandros Maragkoudakis**, *NASA Ames Research Center*

**18:00-20:30** Poster Session + Dinner Buffet + Lab Tours, Physics Canteen

\* Online



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Tuesday 6 Sep.

**Chair: Els Peeters**

**9:00** Photophysics of astroPAHs in the laboratory - **Christine Joblin**, *IRAP, Université Toulouse III / CNRS*

**9:40** The photochemistry of PAHs: insights from theory and experiments - **Alessandra Candian**, *University of Amsterdam*

**10:10** Modeling the Mid-infrared Spectra of Interstellar Grains (PAHs) with hierarchical Bayesian inference - **Dangning Hu**, *AIM/CEA Paris-Saclay*

**10:30-11:00** Coffee

**Chair: Annemieke Petrignani**

**11:00\*** A multi-spectroscopic approach to reveal the astrochemistry of polycyclic aromatic hydrocarbons - **Melanie Schnell**, *Deutsches Elektronen-Synchrotron DESY*

**11:30** PAH fragmentation and formation processes probed by infrared action spectroscopy - **Sandra Brünken**, *FELIX Laboratory, Radboud University*

**12:00** Infrared spectra of protonated and hydrogenated corannulene (C<sub>20</sub>H<sub>10</sub>) & sumanene (C<sub>21</sub>H<sub>12</sub>) using matrix isolation in solid p-H<sub>2</sub> - **Pavithraa Sundararajan**, *National Chiao Tung University*

**12:20** High-Resolution Spectroscopy of Irregular PAH Molecules - **Hernán Velásquez Navarro**, *University of Amsterdam*

**12:40** Electronic Spectra of O-functionalized PAHs: A Potential Carrier of the Extended Red Emission? - **Gabi Wenzel**, *InterCat, Aarhus University*

**13:00-14:00** Lunch

**14:00\*** Modelling anharmonic PAH vibrational bands in the JWST era - **Giacomo Mulas**, *Istituto Nazionale di Astrofisica - Osservatorio Astronomico di Cagliari – cancelled*

**14:30\*** Computing Fully Anharmonic Cascade Emission Spectra for PAH Molecules: Comparison to Observations - **Timothy Lee**, *NASA Ames Research Center*

**14:50** Simulating infrared spectra of polycyclic aromatic hydrocarbons by machine learning accelerated molecular dynamics - **Zeyuan Tang**, *InterCat, Aarhus University*

**15:10** Looking for neutral C<sub>60</sub> in interstellar clouds - **Gaël Rouillé**, *Max Planck Institute for Astronomy at the Friedrich Schiller University Jena*

**15:30-16:10** Coffee + Posters

**Session 3: The relationship of PAHs, fullerenes and dust - Chair: Farid Salama**

**16:10** Interstellar Fullerenes - **Jan Cami**, *University of Western Ontario*

**16:40** Synthesis and spectroscopic characterisation of molecular ions for astrochemical consideration - **Ewen Campbell**, *University of Edinburgh*

**17:10** Shock-induced destruction of fullerenes and cosmic dust analogues: a laboratory perspective - **Ludovic Biennier**, *Institut de Physique de Rennes*

**17:30** IR spectroscopy of protonated fullerenes - **Jos Oomens**, *FELIX Laboratory, Radboud University*

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# The life cycle of cosmic PAHs

Wednesday 7 Sep.

<b>Chair:</b>	<b>Christine Joblin</b>
<b>9:00</b>	Chemical nature of the carbonaceous material produced by evolved stars - <b>Jose Angel Martin-Gago</b> , <i>Instituto ciencia de Materiales de Madrid, CSIC</i>
<b>9:30</b>	Graphene and Quantum dots – Important Constituents of PAH Rich Astrochemical Dust <b>Bhalamurugan Sivaraman</b> , <i>Physical Research Laboratory</i>
<b>9:50</b>	Hydrocarbon content in Si + C (star)dust growth processes - <b>Sandra Wiersma</b> , <i>Université Toulouse III / CNRS</i>
<b>10:10</b>	A plausible molecular mechanism to explain the widely observed near-IR continuum emission: recurrent fluorescence - <b>Ozan Lacinbala</b> , <i>Paris-Saclay University</i>
<b>10:30-11:00</b>	Coffee
<b>11:00</b>	Low Temperature Formation of Carbonaceous Grains from Hydrocarbons and PAHs with the COSMIC Facility - <b>Farid Salama</b> , <i>NASA Ames Research Center</i>
<b>11:30</b>	PAHs and PAH clusters : Insights from theoretical modelling - <b>Mathias Rapacioli</b> , <i>Laboratoire de Chimie et Physique Quantiques</i>
<b>12:00*</b>	Molecular Dynamics Studies of PAH Growth via Cluster Formation - <b>Partha P. Bera</b> , <i>NASA Ames Research Center</i>
<b>12:30*</b>	Anomalous Microwave Emission: Carbon-based or silicate-based carriers? - <b>Nathalie Ysard</b> , <i>Université Paris-Saclay, CNRS</i>
<b>13:00-14:00</b>	Lunch
<b>Chair:</b>	<b>Liv Hornekær</b>
<b>14:00</b>	Charge distribution based emission model of PAHs and fullerenes - <b>Ameek Sidhu</b> , <i>University of Western Ontario</i>
<b>14:20</b>	Uptake of molecules by nanometer-size PAH clusters - <b>Michal Fárník</b> , <i>J. Heyrovsky Institute of Physical Chemistry, ASCR</i>
<b>14:40*</b>	Photochemical Synthesis and Spectroscopy of Covalent PAH Dimers - <b>Michael Duncan</b> , <i>University of Georgia</i>
<b>15:10</b>	Coffee
<b>From 15:30</b>	AROS (Museum)
<b>17:00-21:00</b>	Conference Dinner at AROS

\* Online



# The life cycle of cosmic PAHs

Thursday 8 Sep.

## Session 4: PAHs in the solar system - Chair: Sergio Ioppolo

**9:30** Aromatic Organic Matter in Carbonaceous Meteorites - **Mark Sephton**, *Imperial College London*

**10:00** Cometary carbonaceous molecules – view after Rosetta - **Nora Hänni**, *University of Bern*

**10:30-11:00** Coffee

**11:00** Molecular Wonderland: how Complex is Titan's Chemistry? - **Conor Nixon**, *NASA Goddard Space Flight Center*

**11:30** Time-related Alteration of Aqueous-Phase Polycyclic Aromatic Hydrocarbon (PAH) Photoproducts in the Presence of TiO<sub>2</sub> Nanoparticles - **Lindsey St. Mary**, *Oregon State University*

**12:00** Ice radiolysis: Rate constants for molecular destruction and deuterium/hydrogen exchange - **Christopher Materese**, *NASA Goddard Space Flight Center*

## Session 5: PAHs and interstellar chemistry - Chair: Tamar Stein

**12:30\*** Formation of Astrochemical Relevant Organics by Gas Phase Ion-Molecule Reactions - **M. Samy El-Shall**, *Virginia Commonwealth University*

**13:00-14:00** Lunch

**14:00** Updates from the GOTHAM Project: Individual PAH Detections in Cold Dark Clouds - **Brett McGuire**, *Massachusetts Institute of Technology*

**14:30** Fragmentation Dynamics of Fluorene Explored Using Ultrafast XUV-Vis Pump-Probe Spectroscopy - **Diksha Garg**, *Deutsches Elektronen-Synchrotron DESY*

**14:50** Action gas phase spectroscopy of superhydrogenated PAHs - **Frederik Doktor Skødt Simonsen**, *Institute of Materials Science of Madrid*

**15:10** The effect of curvature on the hydrogenation of PAHs - **Rijutha Jaganathan**, *InterCat, Aarhus University*

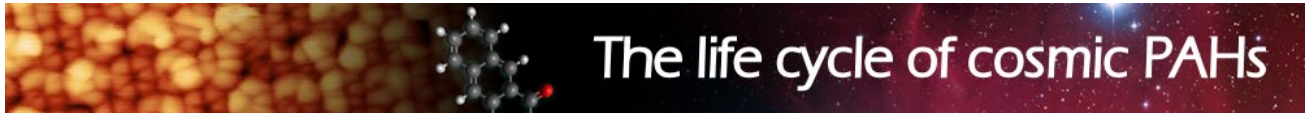
**15:30-16:10** Coffee + Posters

**16:10** Interaction of hydrogen, oxygen and their products on coronene films at low temperature - **Francois Dulieu**, *CY Cergy Paris Université*

**16:40** Hydrogenation of Oxygen Functionalized PAHs - **John Thrower**, *InterCat, Aarhus University*

**17:00** The Effect of PAH Adsorption on MgO Schottky Vacancy in Forsterite: A Machine-Learned Surrogate Model - **Dario Campisi**, *University of Chicago*

\* Online



Friday 9 Sep.

**Session 6 The bright future of PAH research - Chair: Nadia Balucani**

**9:00** The JWST revolution in decoding PAH evolution - **Els Peeters**, *University of Western Ontario / SETI Institute*

**9:30** On the 3.3 micrometer Infrared Emission Feature - **Alan Tokunaga**, *University of Hawaii*

**10:00** The future of PAH observations in the solar system - **Stefanie Milam**, *NASA Goddard Space Flight Center*

**10:30** Closing Talk - **Alexander Tielens**, *Leiden University*

**End at 11:00** Coffee + Sandwich lunch

\* Online