

AstropAH

A Newsletter on Astronomical PAHs

Issue 124 • February 2026

The NASA Ames PAH IR Spectroscopic Database

Orion Bar
JWST NIRC2



www.astrochemistry.org/pahdb

Updates in the PAHdb

Background: NASA/ESA/CSA/PDRs4All Team (S. Fuenmayor)

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Editorial

Dear Colleagues,

This is the 124th issue of AstroPAH!

This month's cover draws your attention to the recent, significant updates to the NASA Ames PAH IR Spectroscopic Database (PAHdb). These include the expansion of the harmonic computed library to nearly 11,000 PAH spectra as well as the availability of new libraries featuring both laboratory-measured and computed PAH cluster spectra. In Addition, a search by boundary-edge code has been introduced, software tools have been upgraded, documentation has been improved, and much more. See a full description in Ricca et al. (2026) in the Abstracts section)

In the *In Focus* section, you will find an article by Prof. Paola Manini about her research on the possible contribution of PAHs to prebiotic processes.

From a critical examination of the PAH hypothesis and unconventional chemistry to an exceedingly narrow 2175 Å extinction bump and recent results from JWST, our *Abstracts* section promises an interesting year for PAH research.

Finally, do not miss the announcements of two — the Final COST NanoSpace Joint Scientific Meeting and Exploring the aromatic universe in the JWST era — meetings and an open position at the University Jena, Germany.

We hope you enjoy this new issue of AstroPAH!

AstroPAH can help you promote your research. Please send your contributions to [our email address](#).

Thank you all for your contributions!

The Editorial Team

**Next issue: 26 March 2026.
Submission deadline: 13 March 2026.**

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PAH Picture of the Month

The NASA Ames PAH IR Spectroscopic Database (PAHdb) has received significant updates (Ricca et al. 2026). This updated release has enabled a detailed decomposition of the PAH emission in the Atomic PDR of the Orion Bar, revealing the distribution of PAH sizes as well as the same analysis on a pixel-by-pixel basis across the full Bar (Maragkoudakis et al. 2026). The Orion Bar is seen in the background.

Credits: Background - NASA / ESA / CSA / PDRs4All Team (S. Fuenmayor); Atomic PDR PAHdb-fit - Ricca et al. (2026); PAH size overlay - Maragkoudakis et al. (2026); and Composition - PAHdb Team / NASA Ames / SJSURF (C. Boersma).

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PAHs: a bridge between astrochemistry and prebiotic processes

by Paola Manini

“When, where and how did life originate on Earth?”

The question of the origin of life remains one of the most intriguing and challenging problems faced by scientists. Starting from the primordial soup theory supported by the experimental evidence provided by Urey and Miller and passing through the hydrothermal vents theory and the possible multifunctional role played by RNA, a common idea has emerged dealing with the key role played by abundant and stable materials that may have contributed to consolidate the three pillars of the concept of life: the emergence of a chemical diversity, the formation of confined microenvironments, the establishment of a sequence of chemical transformation operating under far from equilibrium conditions that may have provided the driven force for energy production and reproduction. In this connection, most of the studies have been focused on the possible implications of the geochemical environment, whereas no possible contribution deriving from organic materials has been considered so far.

Starting from this point, we decided to undertake research activities aimed at assessing, from an experimental point of view, the possible contribution of polycyclic aromatic hydrocarbons (PAHs) to the emergence of life.

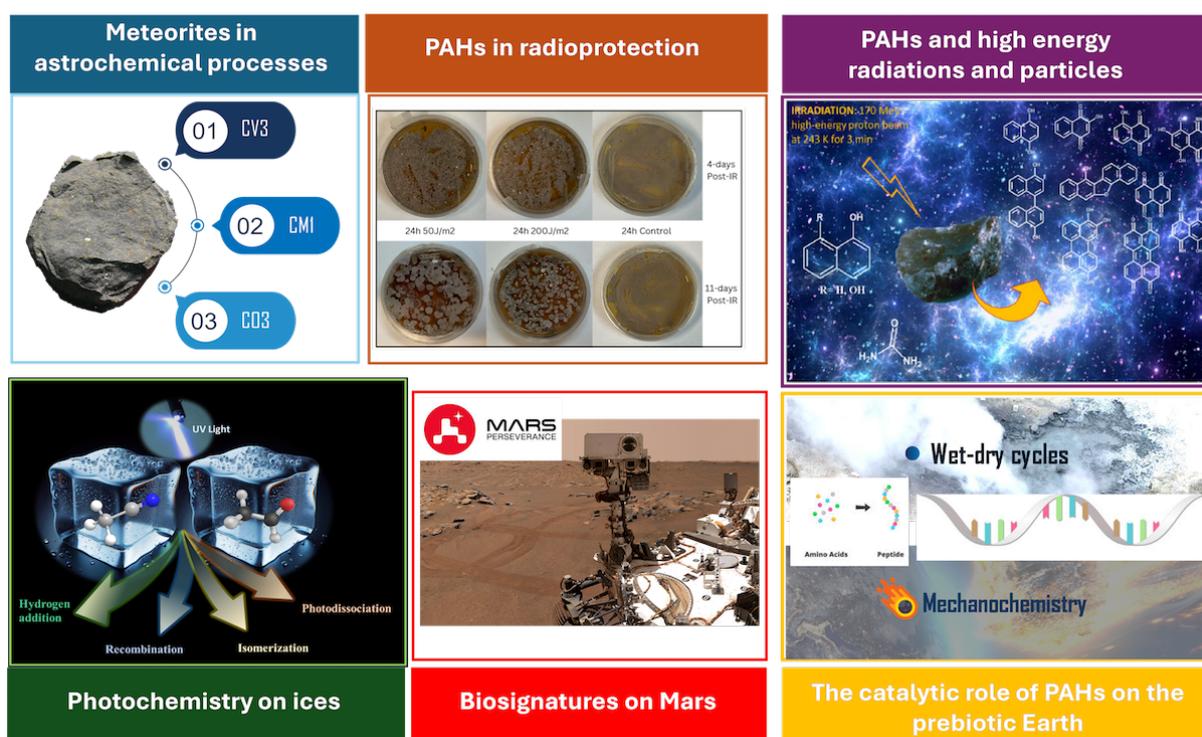
PAHs: the organic fingerprint in the ISM

It is well established that more than 20% of the carbon in the Universe can be associated with PAHs, which appear to have formed as early as a couple of billion years after the Big Bang. PAHs are ubiquitous in the ISM as witnessed by the numerous observations of their peculiar set of infrared emission bands.

The broad feature of these bands suggested that PAHs constitute a wide family accounting for: classic PAHs, oxidized PAHs (oxyPAHs), polymeric PAHs, metal/PAH aggregates and PANHs in which one or more carbon atoms have been substituted with nitrogen atoms.

Most of the studies carried out on PAHs have focused on the fate of these molecules in the gas phase in the ISM or when embedded into ices under the impact of high energy radiations/particle beams. Pursuing experimental and computational approaches, it has been possible to highlight how PAHs can contribute to the chemical diversity of the ISM.

Regardless of their high abundance, few studies have been carried out investigating the possible implication of PAHs in processes associated with the emergence of life. The most representative is the one reported by Ehrenfreund et al. (2006) who showed how assemblies based on aromatic hydrocarbons may have been the most abundant flexible and stable organic materials on the primitive Earth, leading to a perspective of an “aromatic world”. This hypothesis has been in part transposed into the PAH world theory speculating on the possible role of oxyPAHs aggregates as template in the assembly of RNA.



Overview of the research activity at the PMChemisphere laboratory.

The research activity at the PMChemisphere laboratory

The research activity carried out at the PMChemisphere laboratory is mainly focused on the experimental investigation of the reactivity exhibited by PAHs under conditions of astrochemical relevance and of potential interest for the emergence of life (d’Ischia et al. 2019). The most fascinating conceptual leap is the transition from simple hydrocarbons to dynamic actors in the sequence of events that have set the stage for the formation of the building blocks of life and of the first protocell. Overall, the aim is to demonstrate that PAHs may have served as “Primordial Multifunctional organic Entity” (PriME) providing a universal basis for the key requisites of life (d’Ischia et al. 2021).

In this regard the main activities are:

- Study of the chemical transformation of PAHs under conditions of astrochemical relevance (low/high pressure and temperature, inside ice, at the interface of mineral or meteorites)
- Study of the aggregation of small-to-large PAHs in aqueous environment
- Study of the behaviour of PAHs against UV and γ -radiations and particle beams (i.e. proton beams): chemical reactivity and shielding power (Bizzarri et al. 2020)
- Photochemistry of PAHs (Potenti et al. 2018)
- Study of the catalytic activity of PAHs in the processes leading to the formation of biomacromolecules
- Study of the interaction of PAHs with metal ions of astrochemical relevance and their catalytic activity
- PAHs as a biosignature (Fornaro et al. 2025)



Paola Manini is an associate professor at the Department of Chemical Sciences of the University of Naples Federico II, Italy, and is the leader of the PMChemisphere group. The research activity is focused on the chemistry of PAHs under extreme conditions to unveil their possible implication in the processes associated with the emergence of life. Her expertise ranges from organic synthesis to the analysis of complex mixtures by applying different spectroscopic techniques (NMR, EPR, ATR-FTIR, Raman).

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Abstracts

A Critical Examination of the PAH Hypothesis

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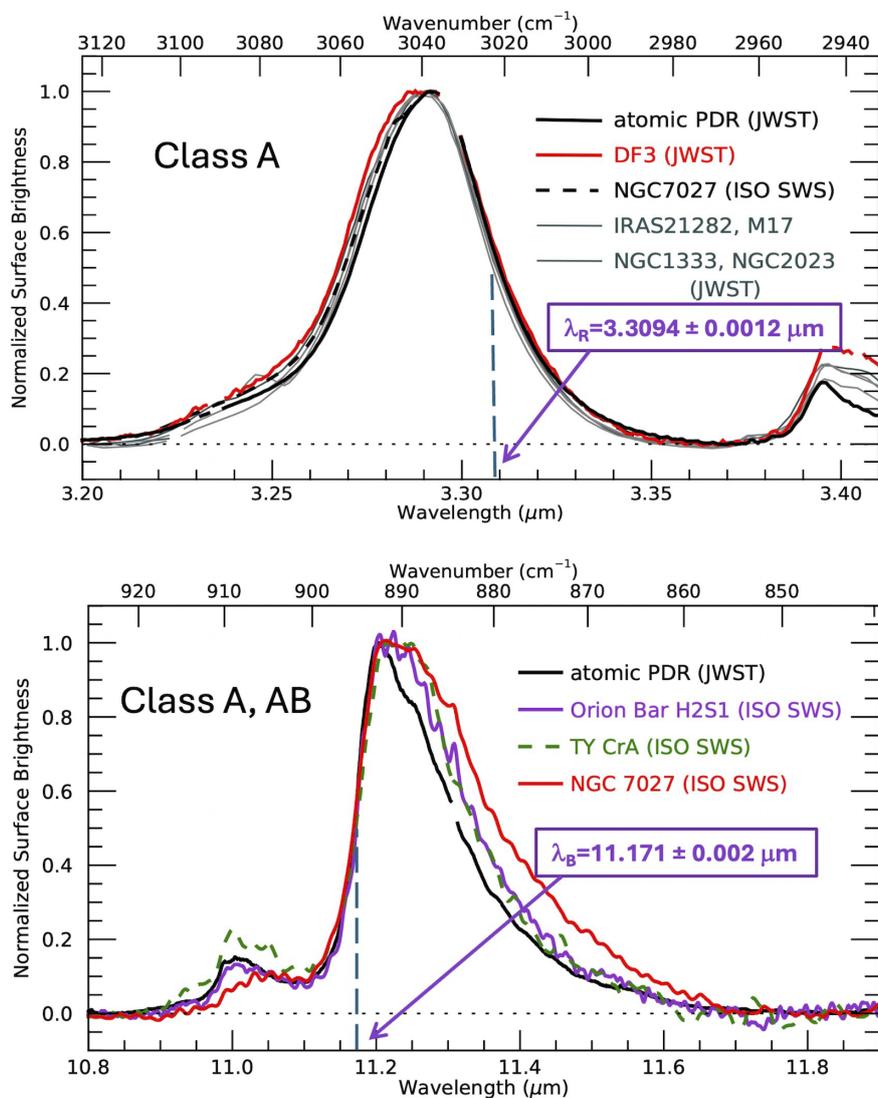
The polycyclic aromatic hydrocarbon (PAH) hypothesis proposes that the aromatic infrared bands (AIBs) observed at 3.3, 6.2, 7.7, 8.6, 11.3, and 12.7 μm originate from gas-phase PAH molecules. These bands exhibit consistent peak wavelengths and profiles in diverse sources, and *Infrared Space Observatory (ISO) Short-Wavelength Spectrometer (SWS)* and *James Webb Space Telescope (JWST)* spectra show a nearly identical red wing of the 3.3 μm AIB and blue wing of the 11.2 μm AIB in the dominant Class A sources. This spectral uniformity suggests that the AIBs arise from a small, well-defined set of gas-phase PAH species, regardless of the excitation conditions or the nature of the source such as H II regions, reflection nebulae, planetary nebula, young stellar objects, or the diffuse interstellar medium. However, a small number of gas-phase PAH species is inconsistent with current modeling of the AIBs that require a wide range of PAH types and sizes. It is also inconsistent with the lack of observed ultraviolet (UV) and optical absorption bands from gas-phase PAH molecules. Furthermore, there is no plausible formation pathway to produce only a small number of specific PAH molecules in the interstellar medium. These issues require quantitative investigation in order to definitively establish gas-phase PAH molecules as the carrier of the AIBs.

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Spectra of the 3.3 μm AIB (top) and the 11.2 μm AIB (bottom). Note that the red wing of the 3.3 μm AIB and the blue wing of the 11.2 μm AIB are extremely constant in many different types of Galactic sources. The wavelength and the dispersion of the half power points of the red wing of the 3.3 μm AIB and the blue wing of the 11.2 μm AIB are indicated. This suggests a small and very similar set of PAHs that give rise to the 3.3 μm AIB and a different small set of PAHs for the 11.2 μm AIB. Details are given in Fig. 1 and 3 in the paper.

JWST MIRI color classification of mid-infrared selected galaxies

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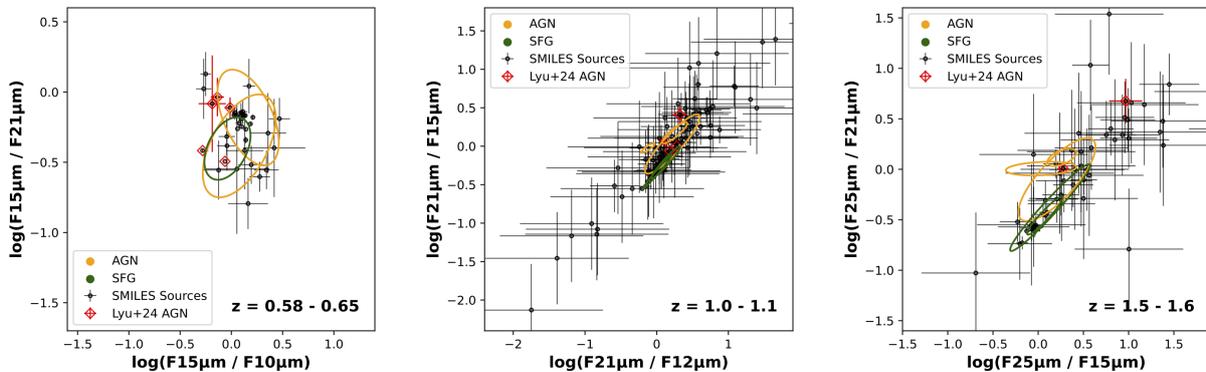
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MIRI color classification of SMILES galaxies as AGN, SFGs and Si-absorption galaxies. The subregions obtained from a Gaussian mixture modeling analysis.

We have developed a method to obtain mid-infrared (MIR) spectral galaxy classification using *James Webb* Space Telescope Mid-Infrared Instrument (MIRI) colors, based on *Spitzer's* invaluable mid-infrared spectra. We introduce a z -dependent photometric color classification of MIR-selected galaxies at high redshifts, toward cosmic noon. The largest *Spitzer* MIR spectral database is used to obtain synthetic photometry in the broadband filters of JWST MIRI. We generated colors combinations to trace the strong polycyclic aromatic hydrocarbon (PAH) emission features and the $9.7\mu\text{m}$ silicate feature in seven redshift windows from $z = 0.25 - 2.10$. Our z -dependent MIRI color-color plots can classify active galactic nuclei (AGN), star-forming galaxies (SFGs), and silicate absorption-dominated galaxies up to $z \sim 2$. We applied our z -dependent photometric color classification to the largest ($\sim 34\text{ arcmin}^2$) MIRI survey called the Systematic Mid-infrared Instrument Legacy Extragalactic Survey (SMILES), to identify AGN, SFGs, and Si-absorption dominated galaxies out to intermediate redshifts. The identified JWST/MIRI SFGs sample includes galaxies with total IR luminosities of $10^{9.2} \sim 10^{11.9} L_{\odot}$ at $0.9 \leq z < 1.57$. The majority of these SFGs are consistent with the $z \sim 1$ main sequence. We also identified the first examples of $z \sim 1$ galaxies with deep silicate absorption with this new tool.

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Detection of CH₃⁺ in the O-rich planetary nebula NGC 6302

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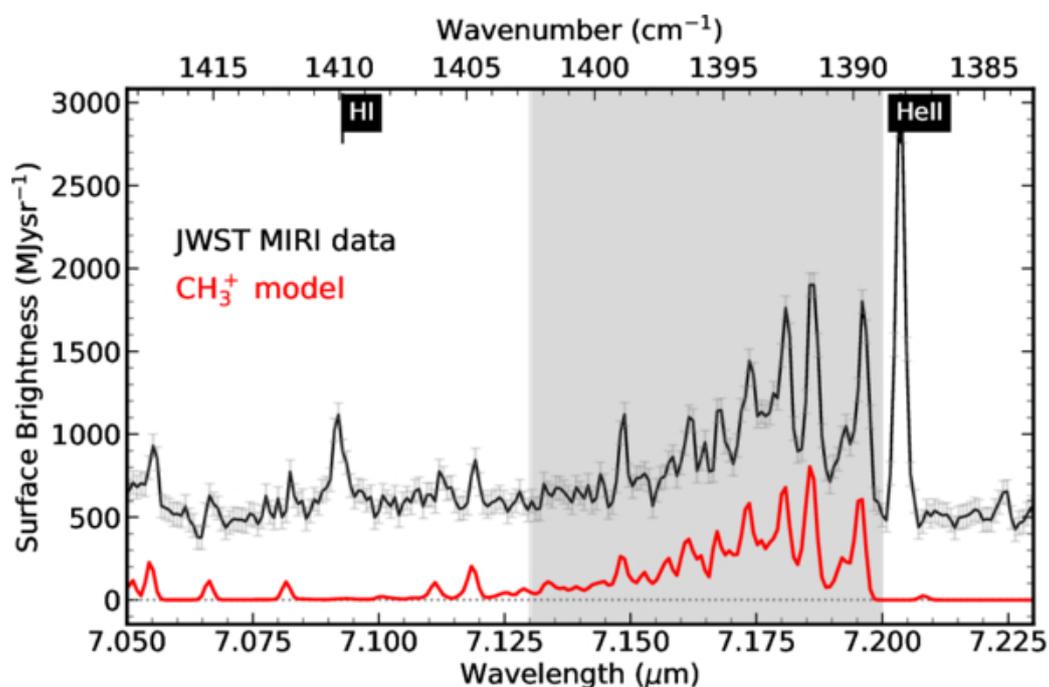
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The continuum-subtracted JWST/MIRI spectrum of NGC 6302 (black, offset vertically for clarity) compared to a CH_3^+ model (red) at excitation temperature of 600 K. The HI recombination line at $7.0928 \mu\text{m}$ and the He II line at $7.2036 \mu\text{m}$ are labelled at the top.

Planetary nebulae are sites where ejected stellar material evolves into complex molecules, but the precise physical conditions and chemical routes that govern these processes are unclear. The presence of abundant carbon-rich molecules in O-rich environments poses particular challenges. Here we report the first detection of methyl cation (CH_3^+) in any planetary nebula, observed in the O-rich nebula NGC 6302 using JWST MIRI/MRS observations. CH_3^+ is a key driver of organic chemistry in UV-irradiated environments. Spatially resolved observations reveal that CH_3^+ is co-located with ^{12}CO , H_2 , HII , HCO^+ , and polycyclic aromatic hydrocarbons (PAHs). LTE modelling of the CH_3^+ emission yields excitation temperatures of 500–800 K in the inner bubble and torus, rising to 1000-2000K in the outer bubble of NGC 6302, with column densities ranging from $\sim 10^{11}$ to 10^{13} cm^{-2} . This detection demonstrates that hydrocarbon radical chemistry must be incorporated into planetary nebulae chemical models. Further near-IR observations are crucial to map different chemical networks operating in these environments.

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The PAH 3.4 micron feature as a tracer of shielding in the Orion Bar and NGC 6240

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We have carried out a detailed analysis of the 3.4 μm spectral feature arising from Polycyclic Aromatic Hydrocarbons (PAH), using JWST archival data. For the first time in an external galaxy (NGC 6240), we have identified two distinct spectral components of the PAH 3.4 μm feature: a shorter wavelength component at 3.395 μm , which we attribute to short aliphatic chains tightly attached to the aromatic rings of the PAH molecules; and a longer wavelength feature at 3.405 μm that arises from longer, more fragile, aliphatic chains that are weakly attached to the parent PAH molecule. These longer chains are more easily destroyed by far-ultraviolet photons ($>5\text{eV}$) and PAH thermal emission only occurs where PAH molecules are shielded from more energetic photons by dense molecular gas. We see a very strong correlation in the morphology of the PAH 3.395 μm feature with the PAH 3.3 μm emission, the latter arising from robust aromatic PAH molecules. We also see an equally strong correlation between the PAH 3.405 μm morphology and the warm molecular gas, as traced by H₂ vibrational lines. We show that the flux ratio PAH 3.395/PAH 3.405 < 0.3 corresponds strongly to regions where the PAH molecules are shielded by dense molecular gas, so that only modestly energetic UV photons penetrate to excite the PAHs. Our work shows that PAH 3.405 μm and PAH 3.395 μm emission features can provide robust diagnostics of the physical conditions of the interstellar medium in external galaxies, and can be used to quantify the energies of the photon field penetrating molecular clouds.

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An Unconventional Dark Radical Chemistry in Dense Molecular Cloud: Directed Gas-Phase Formation of Naphthyl Radicals

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The synthetic pathways to aromatic molecules inside photon shielded dense molecular clouds remain a fundamental, unsolved enigma in astrochemistry and astrophysics with low-temperature molecular growth routes involving aromatic radicals, like prototype bicyclic naphthyl (C₁₀H₇•), implicated as key sources. Here, exploiting crossed molecular beam experiments augmented by electronic structure calculations, unexpected pathways are exposed leading to the gas phase formation of 1- and 2-naphthyl via barrierless bimolecular reactions of atomic carbon (C) with indene (C₉H₈) and of dicarbon (C₂) with styrene (C₈H₈) accompanied by ring expansion and cyclization together with aromatization. These facile routes challenge conventional wisdom that aromatic radicals are formed in deep space solely via 'bright' gas phase photochemistry of their closed shell polycyclic aromatic hydrocarbon (PAH) precursors. A hitherto disregarded 'dark' aromatic radical chemistry with aromatic radicals synthesized via gas-phase reactions offers new concepts on the chemical evolution of the chemistry of dark molecular clouds eventually culminating in the rapid formation of aromatics, fullerenes, and carbonaceous nanostructures.

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On the Interstellar Extinction Curve toward HD 93222, A Sightline with an Exceedingly Narrow 2175 Å Extinction Bump

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The 2175 Å extinction bump, the most prominent spectral feature superimposed on the interstellar extinction curve, is widely seen in the interstellar medium (ISM) of the Milky Way and external galaxies, both near and far. While its central wavelength is remarkably stable and independent with environment, its width shows considerable variation and environmental dependence. Here we examine the extinction curve for the line of sight toward HD 93222, a young star located in the Carina nebula. It is found that the 2175 Å bump is extremely sharp, which is among the narrowest ever found in the Milky Way and external galaxies. We model the derived extinction curve and find that, to explain the extinction characteristics of HD 93222, in addition to the conventional silicate and graphite dust mixture, an additional population of nano-sized graphitic grains is required.

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The NASA Ames PAH IR Spectroscopic Database: Computational Version 4.00, Software Tools, Website, and Documentation

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Version 4.00 of the library of computed spectra of the NASA Ames PAH IR Spectroscopic Database (PAHdb) includes an expanded set of polycyclic aromatic hydrocarbon (PAH) spectra, totaling 10,749, calculated using the harmonic approximation and a basis set containing polarization functions. The software tools offered through PAHdb have also been significantly expanded, including optimizations to more efficiently handle the large number of spectra now available. Major improvements have been made to the PAHdb website, which now also offers new libraries of laboratory and computed PAH cluster spectra. PAH boundary-edge codes are now being used throughout PAHdb to hold structural information and to search for specific PAH isomers. All enhancements and updates are described in expanded documentation. As a demonstration, the updated version 4.00 computational library and improved software tools are used to analyze the James Webb Space Telescope spectrum of the atomic photodissociation region of the Orion Bar and show a remarkable improvement in matching the 6.2 μm emission band and the 10-15 μm emission over earlier library versions.

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<https://ui.adsabs.harvard.edu/abs/2026ApJS..282...7R/abstract>

PDRs4All: XVIII. The evolution of the PAH ionisation and PAH size distribution across the Orion Bar

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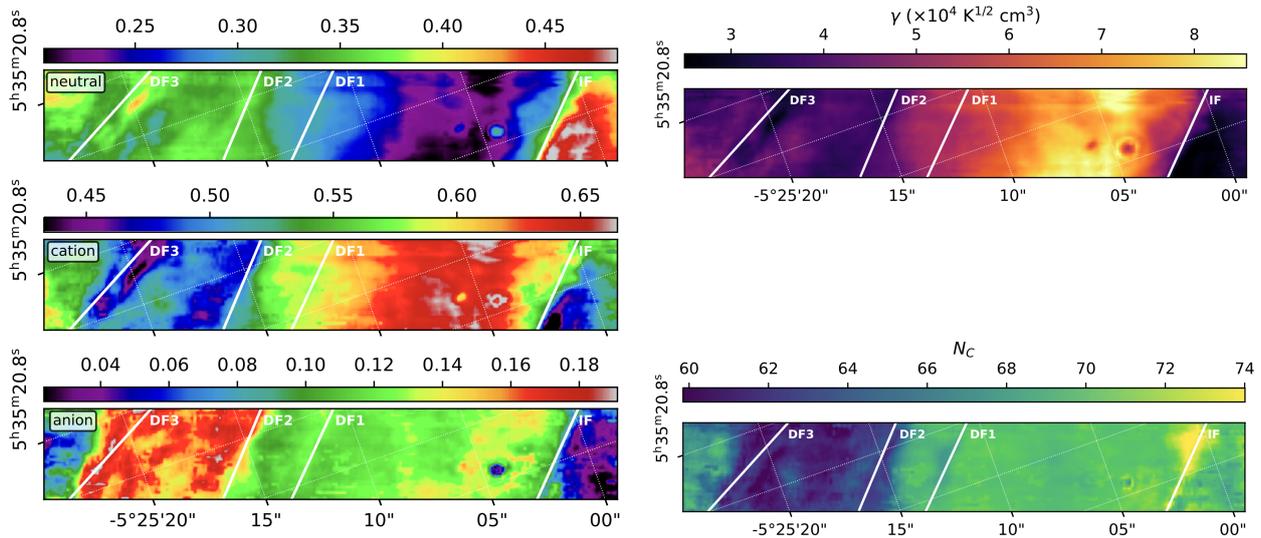
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We investigate the evolution of the PAH population's charge state and size across key physical zones in the Orion Bar, which include the HII region, the atomic PDR (APDR), and three HI/H₂ dissociation fronts (DF1, DF2, and DF3). Utilising the NASA Ames PAH Infrared Spectroscopic Database (PAHdb) and the pyPAHdb spectral modelling tool, we analysed the MIRI-MRS observations of the Orion Bar from the "PDRs4All" ERS Program. pyPAHdb modelling reveals the fractional contribution of the different PAH charge states and sizes to the total PAH emission across the Orion Bar. Cationic PAH emission peaks in the APDR region, where neutral PAHs have minimal contribution. Emission from neutral PAHs peaks in the HII region that consists of emission from a face-on PDR associated to the background OMC-1 molecular cloud, and in the molecular cloud regions past DF2. PAH anions are observed deep within the DF2 and DF3 zones. The average PAH size ranges between $\sim 60 - 74$ Nc. The modelling reveals regions of top-down PAH formation at the ionisation front, and bottom-up PAH formation within the molecular cloud region. The PAH ionisation parameter γ ranges between $\sim 2 - 9 \times 10^4$. Intensity ratios tracing PAH ionisation scale well with γ in regions encompassing edge-on or face-on PDR emission, but their correlation weakens within the molecular cloud zone. Modelling of the 5–15 μm PAH spectrum with pyPAHdb achieves comprehensive characterization of the net contribution of neutral and cationic PAHs across different environments, whereas empirical PAH proxy intensity ratio tracers can be highly variable and unreliable outside regions dominated by PDR emission. The derived average PAH size in the different physical zones is consistent with a view of PAHs being more extensively subjected to ultraviolet processing closer to the ionisation front, and less affected within the molecular cloud.



Maps of the PAH charge fractions (neutral, cation, anion; left panel), the PAH ionization parameter γ (top-right panel), and the average number of carbon atoms N_C (bottom-right panel), across the PDRs4All JWST observations of the Orion Bar.

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Astronomy & Astrophysics (Accepted)

<https://arxiv.org/abs/2601.23282>



Meetings

Final COST NanoSpace Joint Scientific Meeting

1st Announcement

**Tenerife, Canary Islands, Spain
15–17 September, 2026**

<https://meetings.iac.es/nanospacefjism2026/>

General Action Scope:

The main aim and objective of the COST Action NanoSpace (“Carbon molecular nanostructures in space”; CA21126) is to advance the fundamental understanding of the physics and chemistry of cosmic carbon nanomaterials (nanocarbons; nC) and their relevance in non-terrestrial environments by promoting the interdisciplinary combination of state-of-the-art astronomical, laboratory, and theoretical studies, among others.

The main scientific challenges are the following:

* What nanocarbon species are present in space and how can we identify them? * What are the chemical pathways that lead to their formation and destruction? * What is the role of nanocarbon species in non-terrestrial environments? This is in cosmic and in prebiotic chemistry (astrobiology) and in astrophysics.

In order to attack the scientific challenge, NanoSpace proposes an interdisciplinary approach, combining the expertise from a wide range of disciplines like observational astronomy, laboratory astrophysics, astrobiology, theoretical chemistry, synthetic chemistry, molecular reaction dynamics, material science, spectroscopy, graph theory, and data science (AI, big data). The ambitious interdisciplinary nature of NanoSpace has the advantage that nanocarbons have potential applications in nanotechnology. Researchers and innovators from all these fields are thus welcome to participate both in the meeting and in the Action (see below).

NanoSpace takes advantage of the recent successful operation of the James Webb Space Telescope (JWST), the new facilities that can better mimic the interstellar medium (ISM) on the ground as well as the recent developments in the computational facilities and in laboratory techniques.

The Action is organized in four interdisciplinary Working Groups (WG):

* WG 1: "The Cosmic Inventory of nanocarbons". * WG 2: "Processing, reactivity and relaxation pathways of nC". * WG 3: "Role and Importance of nC in Non-Terrestrial Environments". * WG 4: "Impact, Inclusiveness and Outreach".

Specific Final Action Meeting Scope:

The Final Action Joint Meeting will focus on the fundamental and applied research of diverse carbon-based molecular nanostructures "including fullerenes, graphene, carbon nanotubes, and their derivatives" within the broader context of space science and exploration. The meeting will address key questions related to the formation, evolution, properties, and potential applications of these nanocarbon materials under space-relevant conditions. Discussions will be structured around the major WG topics, and including thematic areas such as: (i) Formation and Characterization; (ii) Space Radiation and Stability; (iii) Astrobiology and Planetary Science; (iv) Applications in Space Technology; and (v) Laboratory Studies. By bringing together experimental, theoretical, and observational perspectives, the meeting aims to foster interdisciplinary dialogue and consolidate the scientific advances achieved within the COST Action NanoSpace.

This is the Final COST NanoSpace Joint Scientific Meeting (in person), focused on the main Action scientific results achieved by the interaction and collaboration among the diversity of disciplines (laboratory astrophysics, theoretical chemistry and physics, astronomy, astrobiology, material science, among others) and researchers (especially from ITC and young researchers) of the Action. The program will be composed by scientific sessions separated by WG topic, and short special sessions on the NanoSpace Knowledge Hub, NanoSpace games, and NanoSpace links with industry are also planned.

Deadline for registration (free) and abstract submission: 30th June 2026

Organizing committee (LOC/SOC):

Dr. Domingo Anibal García Hernández, Instituto de Astrofísica de Canarias (IAC), Spain
Prof. Eleanor Campbell, University of Edinburgh, Scotland (UK)
Dr. Chris Ewels, CNRS Institut des Matériaux Jean Rouxell, France
Dr. Polona Umek, Jozef Stefan Institute, Slovenia
Dr. Dogan Erbahar, Dogus University, Turkey
Dr. Alicja Domaracka, CNRS CIMAP, France
Dr. Ko-Ju Chuang, Leiden University, Netherlands

The Action NanoSpace in the internet: <https://research.iac.es/proyecto/nanospace/>

The Action NanoSpace in the COST website: <https://www.cost.eu/actions/CA21126/>

Apply to join the COST Action NanoSpace: <https://www.cost.eu/actions/CA21126/#tabs+Name:Working%20Groups%20and%20Membership>

Final note: Please check the meeting website for news and updates about the final list of invited speakers, hotel registration links, etc. More detailed information will be given in a second announcement.

E-mail for contact: nanospacefjsm2026@iac.es

Exploring the aromatic universe in the JWST era

Abstract Submission Now Open

London, ON, Canada
6 - 10 July, 2026

<https://www.aromaticuniverse.space>

Dear colleagues,

We are pleased to announce that abstract submission is now open for “Exploring the aromatic universe in the JWST era”, which will take place at Western University (London, Ontario, Canada) on 6-10 July 2026.

Important dates:

- Mon February 2, 2026: Abstract submission opens
- Spring 2026: Registration opens
- Sun March 15, 2026: Abstract submission deadline
- Wed April 15, 2026: Regular registration closes
- Mon June 15, 2026: Late registration closes

A list of confirmed invited speakers and additional details are available at

<https://www.aromaticuniverse.space>

If you have any questions, please contact us.

We eagerly await your submissions and look forward to welcoming you to London, Ontario, in July 2026.

Sincerely,

The Science Organizing Committee

E-mail for contact: aromaticuniverse1@gmail.com



Announcements

PhD position in Experimental Research on Exoplanet Atmospheres

Advertised by Alexey Potapov

A new PhD position is available in the Analytical Mineralogy Group at the Institute of Geosciences, Friedrich Schiller University Jena, Germany, under the supervision of Dr. habil. Alexey Potapov and Prof. Dr. Falko Langenhorst. The position is within the framework of the German Research Foundation (DFG) project “Dust Clouds in Exoplanetary Atmospheres: A Laboratory View”. The project will address a crucial gap in exoplanet atmospheric research by systematically studying the near- and mid-infrared spectral properties of porous silicate grains and gas-grain interactions at high temperatures relevant to exoplanet atmospheres. The experimental data will be used to analyse and interpret observational spectra of exoplanet atmospheres, particularly James Webb Space Telescope (JWST) spectra, in collaboration with colleagues from the Max Planck Institute for Astronomy. Various experimental techniques will be employed within the framework of the project, such as laser ablation, infrared spectroscopy, mass spectrometry, transmission and scanning electron microscopy, and energy dispersive X-ray spectroscopy.

Your responsibilities:

- Learn and apply experimental and analytical techniques
- Presentation of your results at international conferences
- Publication of your results together with partners in internationally renowned journals
- As part of the project, you will have the opportunity to complete your doctorate

Your profile:

- A Master's degree in experimental physics or chemistry
- Very good written and spoken English skills are required
- You have an interest/knowledge in the field of physics and chemistry of exoplanet atmospheres
- You like to work in a multicultural environment

- Your duties will require traveling and participation in scientific conferences in Germany and abroad

For informal enquiries and expressions of interest, candidates are encouraged to contact Dr Alexey Potapov.

Applications should be sent to Dr Alexey Potapov and include a brief cover letter, CV including academic transcripts and grades, and a support letter from the supervisor of candidate's master thesis.

Deadline: 31 March 2026

E-mail for contact: alexey.potapov@uni-jena.de

Webpage: <https://www.chemgeo.uni-jena.de/en/53570/team>

AstroPAH Newsletter

<http://astropah-news.strw.leidenuniv.nl>

astropah@strw.leidenuniv.nl

Next issue: 26 March 2026

Submission deadline: 13 March 2026