

# Energetic Processing of Large Molecules

## EPoLM-4 Workshop

CSIC, Madrid, March 4-6, 2019

Monday, March 4

### I- Large carbonaceous molecules in space

08:15–09:00 **REGISTRATION**

09:00–09:35 Olivier Berné (IRAP, U. Toulouse/ CNRS): *Early opportunities with JWST*

09:35–10:10 Mark Stockett (U. Stockholm): *Gas-phase luminescence of complex molecular ions*

10:10–10:30 Sacha Foschino (IRAP, U. Toulouse/ CNRS): *Blind signal separation in mid-IR spectroscopic astronomical data*

10:30–10:50 Annemieke Petrigiani (U. Amsterdam): *Photolysis-induced scrambling processes in Polycyclic Aromatic Hydrocarbon Isotopologues – A pathway to D enrichment*

10:50–11:20 REGISTRATION / COFFEE (Cloister, Serrano 123 Street) – **Put up Posters**

11:20–11:40 Sander Lemmens (Radboud U. Nijmegen): *PAHs and PAH clusters in the far-IR*

11:40–12:00 Tim Lee (NASA ARC): *Anharmonicity and the IR Spectra of PAHs*

12:00–12:20 Giacomo Mulas (INAF, Sardinia): *Anharmonic vibrational spectroscopy of PAHs*

12:20–12:40 Clément Dubois (LCPQ, U. Toulouse/ CNRS): *Spectroscopic characterization of diversity of amorphous carbonaceous C<sub>60</sub> clusters*

12:40–13:00 Paula Plá (UAM, Madrid): *Simplified models for Fullerenes and PAHs stability*

13:00–14:30 LUNCH (CSIC canteen Serrano 150 Street)

### II- Large carbonaceous molecules in the laboratory

14:30–15:05 Eleanor Campbell (U. Edinburgh): *Review of laboratory studies of C<sub>60</sub> (photophysics, collisions & spectroscopy)*

15:05–15:25 Gabi Wenzel (IRAP, U. Toulouse/ CNRS): *VUV processing of large PAHs*

15:25–15:45 Evgeny Posenitskiy (LCAR, U. Toulouse/ CNRS): *Relaxation of excited states in energized PAHs*

15:45–16:05 Alicja Domaracka (CIMAP, CNRS): *Ion processing of molecular clusters*

16:05–16:25 Henning Zettergren (Stockholm U.): *Formation of endohedral fullerenes in atom-fullerene collisions*

16:25–16:45 Mathias Rapacioli (LCPQ, U. Toulouse/ CNRS): *Theoretical insights into the dissociation of PAH clusters*

16:45–18:45 REGISTRATION / **POSTER SESSION & TAPAS** (Cloister, Serrano 123 Street)

## Tuesday, March 5

### III- Interactions with photons and collisional processes

08:30–09:00 **REGISTRATION**

09:00–09:35 Andreas Wolf (Heidelberg U.): *Rotational cooling and electron collisions of molecular ions at the Heidelberg cryogenic storage ring CSR*

09:35–09:55 Gustav Eklund (U. Stockholm): *Mutual neutralization processes in cation-anion reactions*

09:55–10:30 Emmanuel Dartois (ISMO, U. Paris Sud/CNRS): *Cosmic ray ion irradiations of interstellar carbonaceous dust*

10:30–10:50 Stephanie Cazaux (Delft U.): *The kinetic isotope effect in the interaction of H with PAHs*

10:50–11:20 **LAST CALL FOR REGISTRATION / COFFEE** (Cloister, Serrano 123 Street)

11:20–11:40 Liv Hornekaer (U. Aarhus): *The interaction of H with PAHs: an experimentalist's view*

11:40–12:00 Rocco Martinazzo (U. Milan): *The interaction of H with coronene: a quantum chemist's view*

12:00–12:20 Alessandra Candian (Leiden U.): *H<sub>2</sub> formation from photodissociated PAH cations*

### IV- Dust formation and the precursors.

12:20–12:55 Gaël Rouillé (U. Jena): *Properties of carbon soot*

13:00–14:30 **LUNCH** (CSIC canteen, Serrano 150 Street)

14:30–14:50 Lisseth Gavilan (NASA ARC): *Low-temperature condensation of polycyclic aromatic carbon grains from PAHs*

14:50–15:10 Marcelino Agúndez (IFF, CSIC Madrid): *Photochemistry of small carbon molecules around evolved stars*

15:10–15:30 José A. Martín-Gago (ICMM, CSIC Madrid): *Non-aromatic nature of carbonaceous species formed in the conditions of circumstellar environments of evolved stars*

15:30–15:50 Kremena Makasheva (LAPLACE, U. Toulouse/ CNRS): *Cosmic dust analogues in plasmas*

15:50–16:20 **COFFEE** (Cloister, Serrano 123 Street)

16:20–16:40 Isabel Tanarro (IEM, CSIC Madrid): *Broad band rotational spectroscopy and plasma characterization*

16:40–17:00 Víctor J. Herrero (IEM, CSIC Madrid): *Carbonaceous nanoparticles in cold hydrocarbon plasmas*

17:00–18:00 **Discussion**

## Wednesday March 6

### V- Clusters

09:00–09:20 **Michael Duncan** (U. Georgia): *Laser Photochemical Polymerization to Produce Large PAHs*

09:20–09:40 **Partha Bera** (NASA ARC): *Formation of PAH clusters*

09:40–10:00 **Tamar Stein** (Hebrew University): *The formation of benzene from acetylene clusters*

10:00–10:20 **Sebastien Zamith** (LCAR, U. Toulouse/ CNRS): *Stability of PAH clusters*

10:20–10:40 **Hassan Sabbah** (IRAP/LCAR, U. Toulouse/ CNRS): *PAHs, C clusters and fullerenes in meteorites*

10:40–11:10 COFFEE (Cloister, Serrano 123 Street)

11:10–11:30 **Tijani Id Barkach** (IPN, U. Paris Sud/CNRS): *Fragmentation of hydrocarbons by collision.*  
AGAT@ANDROMEDE

### VI- Fragmentation/dissociation

11:30–12:05 **Mikako Matsuura** (Cardiff University): *Dust processing in supernova and supernova remnants*

12:05–12:25 **Elisabetta Micelotta** (U. Helsinki): *New results about the survival of PAHs in interstellar shocks*

12:25–12:45 **Jordy Bouwman** (Leiden Observatory): *Probing the Dissociation of Interstellar Polycyclic Aromatic Hydrocarbons*

12:45–13:05 **Zeyuan Tang** (Aarhus U., Denmark): *An evolutionary algorithm approach to PAH stability*

13:05–14:30 LUNCH (CSIC canteen, Serrano 150 Street)

14:30–15:05 **Aude Simon** (LCPQ, U. Toulouse/ CNRS): *A quantum chemist's view of fragmentation*

15:05–15:25 **Brandy J. West** (U. Ottawa): *Dissociation energies of PAHs*

15:25–15:45 **Mickaël Carlos** (IRAP/LCAR, U. Toulouse/ CNRS): *Disentangling isomers in collision induced dissociation of PAHs*

15:45–16:15 COFFEE (Cloister, Serrano 123 Street) – **Put down Posters**

**VII Lab tour (ICMM-CSIC Labs, visit to the NANOCOSMOS machine)**



**Stardust**