

## Molecules in Space: Linking the Interstellar Medium to the (exo)planets

An Astrochemistry Subdivision Symposium at the American Chemical Society's Fall National Meeting in Washington DC, 20-24<sup>th</sup> August, 2017

Organized by Prof. Alexander G.G.M. Tielens and Dr. Partha P. Bera

### PHYS 001a: Sunday morning

**Session I:** PAHs and the organic inventory of the gas phase: Observations, theory and experiments

Chair: Jordy Bouwman

8-8:35am	Overview	Louis J Allamandola: Some Key Questions Involving PAHs and Astrochemistry
8:35-9:05am	Invited talk 1	Greg Sloan: Polycyclic aromatic hydrocarbons and related forms of interstellar carbon
9:05-9:35am	Invited talk 2	Ralf Kaiser: Exotic organosilicon chemistry in molecular clouds – From crossed molecular beams to computational chemistry
9:35-10:05am	Break	
10:05-10:35	Invited talk 3	Wybren J Buma: High-resolution IR spectroscopy of the isolated aromatic universe: Bad vibrations at work
10:35-11:05	Invited talk 4	Charlie Bauschlicher: Computation of the infrared spectra of polycyclic aromatic hydrocarbons
11:05-11:25	Contributed talk	Annemieke Petrigani: Signatures and evolution of astronomical aromatic molecules
11:25-11:45	Contributed talk	Tao Chen: Anharmonic temperature effects on the infrared spectrum

### PHYS001b: Sunday afternoon

Session I: continued

1:30-1:50pm	Contributed talk	Alessandra Candian: Dehydrogenation of Polycyclic Aromatic Hydrocarbons
1:50-2:00pm	Discussion	Jordy Bouwman

**Session II:** Spectroscopy: Meeting the needs of astronomers with experiments and theory

Chair: John Pearson

2:00-2:35pm	Overview	Susanna Widicus-Weaver: Laboratory spectroscopy in astrochemistry
2:35-3:05pm	Invited talk 1	Pepe Cernicharo: TBD
3:05-3:35		Break
3:35-4:05pm	Invited talk 2	Jes Jorgensen: Complex chemistry of star formation: New insights from the atacama large millimeter/submillimeter array
4:05-4:35pm	Invited talk 3	Xinchuan Huang: Accurate IR line lists for SO <sub>2</sub> isotopologues
4:35-4:55pm	Contributed talk	Vincenzo Barone: New virtual tools for astrochemistry

## PHYS001c: Monday morning

8:00-8:20am	Contributed talk	Laurent Wiesefeld: Recent advances in molecular excitation studies
8:20-8:40am	Contributed talk	Ryan Fortenberry: Brightest of vibrational transitions: Proton-Bound complexes and their ISM implications
8:40-9:00am	Contributed talk	Christina Puzzarini: Rotational spectroscopy as a tool to investigate molecules in space: Laboratory measurements and quantum-chemical calculations
9:00-9:20am	Contributed talk	Sandip Chakrabarti: Synthesis of Biomolecules in interstellar medium
9:20-9:40am	Contributed talk	Cameron Mackie: Temperature dependent 3.3 $\mu\text{m}$ spectra of PAHs: An anharmonic theoretical approach.
9:40-9:50am	Discussion	John Pearson
9:50-10:20am	Break	

### Session III: Hot cores and corinos

Chair: Eric Herbst

10:20-10:55	Overview	Cecilia Ceccarelli: Molecular complexity in hot cores and hot corinos
10:55-11:25	Invited talk 1	Darek Lis: ALMA & Herschel observations of Hot Cores and Corinos
11:25-11:45	Contributed talk	Francesco Fontani: Phosphorus-bearing molecules in massive star-forming clouds

Continued on Tuesday.....

## PHYS001d: Monday afternoon

Solar Eclipse 1:15 pm to 4:15 pm

## PHYS001e: Tuesday morning

### Session III: Hot cores and corinos – continued

8:00-8:30am	Invited talk 3	William Jackson: Branching ratios of $N(^2D_{3/2})$ and $N(^2D_{5/2})$ in the photolysis of $N_2$
8:30-9:00am	Invited talk 4	Steven Charnley: Astronomical model studies related to the composition of hot cores and hot corinos
9:00-9:30am	Invited talk 5	Naseem Rangwala: SOFIA/EXES High Spectral Resolution Observations of Orion IRC2
9:30-10:00	Break	
10:00-10:30	Invited talk 2	Wolf Geppert: Gas phase chemistry and the composition of Hot Cores/Corinos
10:30-10:50	Contributed talk	Victor M. Rivilla: Complex organic molecules in star-forming regions: hot cores and hot corinos
10:50-11:00	Discussion	Eric Herbst

## PHYS001f: Tuesday afternoon

### Session IV: Organic Inventory of protoplanetary disks

Chair: Paola Casseli

1:30-2:05pm	Overview	Catherine Walsh: Organic inventory of protoplanetary disks: Recent insights and future prospects with ALMA and JWST
2:05-2:35pm	Invited talk 1	Stefan Guilloteau: ALMA observations of molecules in protoplanetary disks
2:35-3:05pm	Invited talk 2	Joan Najita: Molecular Clues from Inner Planet-forming Disks
3:05-3:30pm	Break	
3:30-4:00pm	Invited talk 3	Greg Laughlin: Planet formation models
4:00-4:30pm	Invited talk 4	Scott Messenger: The Solar system view on chemistry in protoplanetary disks or
4:30-4:50pm	Contributed talk	Shota Notsu: Possibility to locate the position of the $H_2O$ snowline in protoplanetary disks through spectroscopic observations
4:50-5:10pm	Contributed talk	Andrea Banzatti: Measurements of the thermo-chemical evolution of the planet-forming region in disks
5:10-5:20pm	Discussion	Paola Casseli

### PHYS001g: Wednesday morning

**Session V:** Chemistry of dark clouds: Chemical networks connecting gas and dust  
Chair: Tom Millar

8-8:35am	Overview	Eric Herbst: Gas-grain chemistry in dark clouds: Successes and remaining puzzles
8:35-9:05am	Invited talk 1	Paola Caselli: Molecular inventory of dark clouds: Observations and theory
9:05-9:35am	Invited talk 2	Samy El-Shall: Formation of complex organics and nitrogen-containing organics by ion-molecule and intra-cluster reactions
9:35-9:55am	Contributed talk	Gianfranco Vidali: Time-resolved reactive scattering to study atom-addition reactions on ices: A case study of $H+O_3 \rightarrow OH+O_2$
9:55-10:30am	Break (5-minute break)	
10:30-11:00	Invited talk 3	Gunar Nyman: Chemical kinetics and tunneling on dust grains
11:-11:30am	Invited talk 4	Harold Linnartz: Complex organic molecule formation under dark cloud conditions; the laboratory view
11:30-11:50	Contributed talk	Yuan-Pern Lee: Production and infrared spectra of hydrogenated free radicals and protonated species important in interstellar media
11:50-12:00	Discussion	Tom Millar

### PHYS001h: Wednesday afternoon

**Session VI:** The DIBs: solving a century old problem  
Chair: Nick Cox

1:30-2:05pm	Overview	Farid Salama: Diffuse Interstellar Bands: solving a century old problem
2:05-2:35pm	Invited talk 1	Rosine Lallement: ESO Diffuse Interstellar Bands Large Exploration Survey (EDIBLES)
2:35-3:05pm	Invited talk 2	John Maier (Ewen Campbell): Electronic Spectroscopy of $C_{60}^+$ and its Identification in Interstellar Space
3:05-3:35pm	Break	
3:35-4:05pm	Invited talk 3	Oka: Diffuse Interstellar Bands; 100-years-old Mystery beginning to be solved
4:05-4:25pm	Contributed talk	Gazinur Galazutdinov: Interstellar $C_{60}^+$ : Pro et contra
4:25-4:45pm	Contributed talk	Jacek Krelowski: Constant intensities of diffuse interstellar bands in the spectrum of AE Aur
4:45-5:05pm	Contributed talk	Meriem Elyajouri: Search for infrared DIBs in Barnard 68
5:05-5:15pm	Discussion	

**PHYS001i:Thursday morning**

**Session VII: Chemistry of atmospheres of stars and planets**

Chair: Reggie Hudson

8-8:35am	Overview	Adam Burrows: Molecular spectroscopy of exoplanet atmospheres
8:35-9:05am	Invited talk 1	Kevin Heng: Atmospheric Chemistry in (Currently Observable) Exoplanets: Review of a Suite of Techniques
9:05-9:35am	Invited talk 2	Timothy J Lee: Spectroscopic data for characterizing (exo)-planetary atmospheres
9:35-10:00am	Break	
10:00-10:30	Invited talk 3	Conor Nixon: Astrochemistry of Titan
10:30-11:00	Invited Talk 4	Tom Green: James Webb Space Telescope capabilities for characterizing exoplanet atmospheres
11:00-11:30	Dissertation Award	Eric Parker: Expanding our knowledge of the ranges of environmental conditions that may have been able to support peptide synthesis on the primitive Earth and elsewhere
11:30-11:50	Contributed Talk	Martin Cordiner: Climatological variations in Titan's atmospheric chemistry mapped using ALMA
11:50-12:00	Discussion	Reggie Hudson