

# Astronomy, astrochemistry & the origin of life

## Invited Lecturers:

**Paola Caselli** (MPI for Extraterrestrial Physics)

**Rob Garrod** (University of Virginia)

**Thomas Henning** (MPI for Astronomy)

**Martin McCoustra** (Heriot-Watt University)

**Alessandro Morbidelli** (Cote d'Azur Observatory)

## SOC: Alexey Potapov, Dima Semenov

## Science Talk Speakers:

Jeroen Bouwman (MPIA), Hendrik Linz (MPIA), Simon Glover (ITA),

Sergey Krasnokutski (MPIA), Bertram Bitsch (MPIA), Maria Steinrueck (MPIA),

Hans-Walter Rix (MPIA), Laura Kreidberg (MPIA), Kerstin Göpfrich (MPImF)

## Laboratory Hands-on Session:

Jiao He, Tushar Suhasaria

## School program:

### Monday, August 22

Time	Lecturer	Topic
09:00 – 09:15	LOC / SOC	Welcome & Overview of the School
09:15 – 10:45	Paola Caselli	Astrochemistry 101. Part 1: From Atoms to the Seeds of Life
10:45 – 11:15	–	Coffee break
11:15 – 12:30	Paola Caselli	Astrochemistry 101. Part 2: Molecules as Diagnostic Tools of Star and Planet Formation
12:30 – 14:00	–	Lunch break
14:00 – 14:45	Jeroen Bouwman	Astronomical Observations: From Ultraviolet to Centimeter, from Ground to Space. Part 1
14:45 – 15:30	Hendrik Linz	Astronomical Observations: From Ultraviolet to Centimeter, from Ground to Space. Part 2
15:30 – 16:00	–	Coffee break
16:00 – 18:00	J. Bouwman, H. Linz	Planning JWST observations. Hands-on session

For the daily **lunch menu** at university check:

[https://www.studierendenwerk.uni-heidelberg.de/en/speiseplan\\_neu](https://www.studierendenwerk.uni-heidelberg.de/en/speiseplan_neu)

## Tuesday, August 23

Time	Lecturer	Topic
09:00 – 10:30	Martin McCoustra	Astrochemistry in the Laboratory. Part 1: Making the Chemical Soup
10:30 – 11:00	–	Coffee break
11:00 – 12:30	Martin McCoustra	Astrochemistry in the Laboratory. Part 2: Tweaking the Chemistry into Biology
12:30 – 14:00	–	Lunch
14:00 – 14:45	Sergey Krasnokutski	Formation of Biomolecules in the Interstellar Medium. A Laboratory Test
15:30 – 18:00	Jiao He, Tushar Suhasaria	Identification of Molecules in Ice. Hands-on session
17:00 – 20:00	–	School dinner @ MPIA

## Wednesday, August 24

Time	Lecturer	Topic
09:00 – 10:30	Rob Garrod	Astrochemical Modelling. Part 1: Gas-phase chemistry
10:30 – 11:00	–	Coffee
11:00 – 12:30	Rob Garrod	Astrochemical Modelling. Part 2: Grain-surface chemistry
12:30 – 14:00	–	Lunch
14:00 – 16:00	Rob Garrod	Running and Analyzing a Chemical Model. Hands-on session
16:00 – 16:30	–	Coffee break
16:30 – 17:15	Simon Glover	Simulating chemically reactive flows in astrophysics

## Thursday, August 25

Time	Lecturer	Topic
09:00 – 10:30	Alessandro Morbidelli	Origin of the Solar System. Part 1: Observational Constrains
10:03 – 11:00	–	Coffee
11:00 – 12:30	Alessandro Morbidelli	Origin of the Solar System. Part 2: Models
12:00 – 14:00	–	Lunch
14:00 – 14:45	Bertram Bitsch	The Importance of Water for Exoplanet Formation
14:45 – 15:30	Maria Steinrueck	Understanding photochemical hazes on

		exoplanets through 3D atmospheric simulations
15:30 – 16:00	–	Coffee
16:00 – 16:45	Hans-Walter Rix	Efficient Presentations/Career' Tips & Tricks
19:00 – 22:00	–	Pub evening

### Friday, August 26

Time	Lecturer	Topic
09:00 – 10:30	Thomas Henning	Origin of Life. Part 1: Towards Molecular Complexity
10:30 – 11:00	–	Coffee
11:00 – 12:30	Thomas Henning	Origin of Life. Part 2: Habitability and the Origin of Life
12:30 – 14:00	–	Lunch
14:00 – 14:45	Laura Kreidberg	Frontiers in exoplanet atmosphere characterization
14:45 – 15:30	Kerstin Göpfrich	Can the attempt to build a cell teach us about the origins of life?
15:30 – 16:00	Alexey Potapov, Dima Semenov	Summary & final remarks
16:15	–	End of the School