

# Water during Planet Formation and Evolution

12-16 February 2018 @ University of Zurich, Irchel campus, Y24-G-55

## Workshop schedule

### Monday, 12 February 2018

 #waterZRH

11:00-13:00 Arrival and registration

13:00-13:15 Welcome address and LOC information

13:15-14:10 **Talk session SOLAR SYSTEM #1** (Chair: Maria Schönbachler)

13:15-13:50 **Alessandro Morbidelli** (Nice Observatory)

*Modeling the evolution of water in the Earth's zone*

13:50-14:10 Nader Haghighipour (IfA Hawaii)

*The First Accurate and Quantitative Model of the Formation of Terrestrial Planets and Origin of Earth's Water*

14:10-15:45 **Research groups assignment and meetings**

15:45-16:15 Coffee break

16:15-17:15 **Talk session SOLAR SYSTEM #2** (Chair: Maria Schönbachler)

16:15-16:35 Martin Hilchenbach (MPS Göttingen)

*In-situ Cometary Dust Particle Observations*

16:35-16:55 Isaac Schroeder (University of Bern)

*Rosetta / ROSINA Investigations into Cometary Water from the Comet 67P*

16:55-17:15 Sona Hosseini (JPL/Caltech)

*Next generation of remote high spectral resolution spectrometers to observe water and OD/OH in faint extended gases*

17:15-17:45 Poster flash talks

17:45-19:00 Welcome drink & poster session

### Tuesday, 13 February 2018

09:15-10:30 **Talk session SOLAR SYSTEM #3** (Chair: Gregor Golabek)

09:15-09:50 **Alice Stephant** (Open University)

*Source of hydrogen in the inner solar system revealed by meteorites*

09:50-10:10 Antoine Pommerol (University of Bern)

*Experimental studies of the sublimation of ice/dust mixtures and implications for the formation and evolution of planets*

10:10-10:30 Julie Brisset (University of Central Florida)

*The influence of water ice grains on ejecta production upon low-velocity impacts*

10:30-11:00 Coffee break

11:00-12:15 **Talk session INHERITANCE & DISK PROCESSING #1** (Chair: Sascha Quanz)

11:00-11:35 **Isedore Cleeves** (CfA Harvard)

*Water formation and evolution in protoplanetary disks: observations and theoretical challenges*

11:35-11:55 Maria Drozdovskaya (CSH Bern)

*Pre- and protostellar roots of complex organic molecules in comets*

11:55-12:15 Susanne Wampfler (CSH Bern)

*Water in star-forming regions - lessons learned from Herschel*

12:15-13:30 Lunch break  
13:30-15:00 Research groups meeting

**15:00-16:20 Talk session INHERITANCE & DISK PROCESSING #2** (Chair: Sascha Quanz)

15:00-15:20 Merel van 't Hoff (Leiden University)  
*Imaging the water snowline in protostellar envelopes*  
15:20-15:40 Diana Powell (UC Santa Cruz)  
*Using Ice and Dust Lines to Constrain the Surface Densities of Protoplanetary Disks*  
15:40-16:00 Colin McNally (Queen Mary University London)  
*Wind driven protoplanetary discs and how planets move in them*  
16:00-16:20 Shota Notsu (Kyoto University)  
*Possibility to locate the position of the H<sub>2</sub>O snowline in protoplanetary disks through spectroscopic observations*

16:20-17:00 Coffee break  
17:00-18:00 Poster session

## Wednesday, 14 February 2018

**09:15-10:55 Talk session COMPOSITIONAL INVENTORY #1** (Chair: Ravit Helled)

09:15-09:50 **Jay Farihi** (University College London)  
*Water-rich planetesimals in the terrestrial zone of extrasolar planetary systems*  
09:50-10:10 Maria Cavallius (Stockholm University)  
*Missing Water Vapour in the Beta Pictoris system*  
10:10-10:30 Arazi Pinhas (University of Cambridge)  
*H<sub>2</sub>O abundances in ten giant exoplanets and their implications for planetary formation*

10:30-11:00 Coffee break

**11:00-11:40 Talk session COMPOSITIONAL INVENTORY #2** (Chair: Ravit Helled)

11:00-11:20 Sebastian Marino (University of Cambridge)  
*Inward scattering of exocomets by a planet chain: exozodi levels, impacts and the scattered disc between the planets*  
11:20-11:40 Mohamad Ali-Dib (CPS Toronto)  
*The role of icelines in planet formation: evidences from the gas giants occurrence rate*

11:40-12:15 Discussion #1 / progress report  
12:15-13:30 Lunch

13:30-15:00 Research groups meeting  
15:00-19:00 Free time / guided tour in Zurich

19:00 Conference dinner

## Thursday, 15 February 2018

**09:15-10:30 Talk session DUST EVOLUTION & PLANETESIMAL FORMATION #1** (Chair: Kees Dullemond)

09:15-09:50 **Til Birnstiel** (LMU Munich)  
*Dust evolution and the water snowline*  
09:50-10:10 Sebastiaan Krijt (University of Chicago)  
*Impact of pebble formation and migration on observable gas-phase volatiles on both sides of the snowline*

10:10-10:30 Djoeke Schoonenberg (University of Amsterdam)

*The behaviour of pebbles around the snowline*

10:30-11:00 Coffee break

11:00-11:40 **Talk session DUST EVOLUTION & PLANETESIMAL FORMATION #2** (Chair: Kees Dullemond)

11:00-11:20 Sebastien Charnoz (IPGP Paris)

*Water transport and planetesimal formation in the early protoplanetary disk*

11:20-11:40 Sebastian Stammer (LMU Munich)

*Dust coagulation at the water ice line during an FU Orionis outburst*

11:40-12:15 **Talk session PLANETARY INTERIORS & EVOLUTION #1** (Chair: Martin Jutzi)

11:40-12:00 Yamila Miguel (Leiden University)

*Constraints on Jupiter interior from Juno mission*

12:00-13:15 Lunch break

13:15-14:45 **Research groups meeting**

14:45-16:00 **Talk session PLANETARY INTERIORS & EVOLUTION #2** (Chair: Martin Jutzi)

14:45-15:25 **Lena Noack** (FU Berlin)

*Influence of water on the long-term evolution of the mantle*

15:25 -16:00 **Keiko Hamano** (ELSI Tokyo Tech)

*Role of water in the evolution of molten terrestrial planets*

16:00-16:30 Coffee break

16:30-17:10 **Talk session PLANETARY INTERIORS & EVOLUTION #3** (Chair: Martin Jutzi)

16:30-16:50 Christoph Burger (University of Vienna)

*Realistic modeling of collisional water transfer and loss during late-stage planet formation*

16:50-17:10 Maxim Ballmer (ETH Zurich)

*Compositional fractionation of terrestrial magma oceans*

17:10-18:00 Discussion session #2

## Friday, 16 February 2018

09:15-10:45 **Talk session ROCKY PLANETS & HABITABILITY** (Chair: Yann Alibert)

09:15-09:50 **Chris Ormel** (University of Amsterdam)

*Rocky planet formation and the H<sub>2</sub>O iceline*

09:50-10:10 Arnaud Salvador (Université Paris Sud)

*The relative influence of H<sub>2</sub>O and CO<sub>2</sub> on the primitive surface conditions and evolution of rocky planets*

10:10-10:45 **Laura Schaefer** (Arizona State University)

*Effect of water outgassing on magma ocean redox state*

10:45-11:15 Coffee break

11:15-11:45 Discussion session #3

11:45-12:15 **Research groups meeting**

12:15-13:30 Lunch

13:30-15:00 **Presentations from research groups**

15:00-15:15 Group award

15:15-15:30 Summary and closing address

# Poster list

## Posters sessions Monday & Tuesday evening

Steven Adams (Clemson University)

*Hot water and OH in the inner disk of the Herbig Ae/Be star HD 101412*

Sareh Ataiee (University of Bern)

*Spiral shock heating in protoplanetary disks: effect on the snow-line*

Jean-David Bodenán (University of Zurich/ETH)

*The role of water in the alteration of CO and CV chondrite CAls*

Irene Bonati (ELSI Tokyo)

*Predicting the observability of protoplanetary collisions*

Dan Bower (CSH Bern)

*Evolution of H<sub>2</sub>O and CO<sub>2</sub> reservoirs during magma ocean degassing*

Barbara Celi Braga Camargo (UNESP-Brazil/  
Tübingen)

*Mass Evolution of Protoplanet in Compact Binary Systems*

Sean Brittain (Clemson University)

*Spectro-astrometric Study of Warm Gas in Disks with iSHELL on the IRTF*

Remo Burn (University of Bern)

*New determination of the ice-line position: Radial drift and concurrent water depletion of planetesimals*

Caroline Dorn (University of Zurich)

*Constraining the amounts of water on exoplanets: limitations and perspectives*

Joanna Drazkowska (University of Zurich)

*Planetesimal formation at water snowline*

Francesco Flammini Dotti (Xi'an Jiaotong-  
Liverpool University)

*The long-term evolution of planetary systems in stellar clusters*

Alexander Gagliano (Los Alamos National  
Laboratory)

*Cosmological Origins of Water*

Jonas Haldemann (University of Bern)

*TBD*

Christian Lenz (MPIA Heidelberg)

*Pebble Flux Regulated Planetesimal Formation*

Tim Lichtenberg (ETH Zurich)

*Gradual desiccation of rocky protoplanets from aluminum-26 heating*

Michael Lozovsky (University of Zurich)

*Constraining the Composition of Exoplanets*

Francisco J. Pozuelos (University of Liège)

*Main Belt Comets: ocean-water source closest to Earth?*

Christoph Schaefer (University of Tuebingen)

*A Smooth Particle Hydrodynamics Code to Model Collisions Between Solid, Self-Gravitating Objects*

Judit Szulagyi (ETH/University of Zurich)

*Water ice in the circumplanetary disk and icy satellite formation*

Tomas Tamfal (University of Zurich)

*TBD*

Hiroshi Terada (NAOJ)

*Observations of Water Ice in Protoplanetary Disks*

Miles Timpe (University of Zurich)

*TBD*

Neal Turner (JPL/Caltech)

*TBD*

Julia Venturini (University of Zurich)

*A recipe for Mini-Neptunes*

# Participants

Steven Adams (Clemson University)  
Yann Alibert (University of Bern)  
Mohamad Ali-Dib (University of Toronto)  
Sareh Ataiee (University of Bern)  
Maxim Ballmer (ETH Zurich)  
Til Birnstiel (LMU Munich)  
Jean-David Bodenan (University of Zurich/ETH)  
Irene Bonati (ELSI, Tokyo)  
Dan Bower (University of Bern)  
Julie Brisset (University of Central Florida)  
Christoph Burger (University of Vienna)  
Barbara Celi Braga Camargo (UNESP-Brazil/  
Tübingen)  
Sean Brittain (Clemson University)  
Remo Burn (University of Bern)  
Maria Cavallius (University of Stockholm)  
Sebastian Charnoz (IPGP Paris)  
Alice Chau (University of Zurich)  
Ilse-dore Cleeves (CfA Harvard)  
Hongping Deng (University of Zurich)  
Caroline Dorn (University of Zurich)  
Joanna Drazkowska (University of Zurich)  
Maria Drozdovskaya (University of Bern)  
Kees Dullemond (University of Heidelberg)  
Jay Farihi (University College London)  
Francesco Flammini Dotti (Xi'an Jiaotong-  
Liverpool University)  
Alexander Gagliano (Los Alamos National  
Laboratory)  
Gregor Golabek (BGI Bayreuth)  
Nader Haghighipour (IfA Hawaii)  
Jonas Haldemann (University of Bern)  
Keiko Hamano (ELSI, Tokyo Tech.)  
Tom Hands (University of Zurich)  
Ravit Helled (University of Zurich)  
Martin Hilchenbach (MPS Göttingen)  
Sona Hosseini (JPL-Caltech)  
Mark Hutchinson (University of Zurich)  
Martin Jutzi (University of Bern)  
Sebastiaan Krijt (University of Chicago)  
Christian Lenz (MPIA Heidelberg)  
Tim Lichtenberg (ETH Zurich)  
Michael Lozovsky (University of Zurich)  
Thomas Maindl (University of Vienna)  
Sebastian Marino (University of Cambridge)  
Collin McNally (QMU London)  
Yamila Miguel (Leiden University)  
Alessandro Morbidelli (Nice Observatory)  
Simon Müller (University of Zurich)

Lena Noack (FU Berlin)  
Shota Notsu (Kyoto University)  
Chris Ormel (University of Amsterdam)  
Arazi Pinhas (University of Cambridge)  
Diana Powell (University of California Santa Cruz)  
Antoine Pommerol (University of Bern)  
Francisco J. Pozuelos (University of Liège)  
Sascha Quanz (ETH Zurich)  
Arnaud Salvador (Université Paris Sud)  
Christoph Schaefer (University of Tuebingen)  
Laura Schaefer (Arizona State University)  
Maria Schönbachler (ETH Zurich)  
Djoeke Schoonenberg (University of Amsterdam)  
Isaac Schroeder (University of Bern)  
Sebastian Stammer (LMU Munich)  
Alice Stephant (Open University)  
Clement Surville (University of Zurich)  
Judit Szulagyi (ETH/University of Zurich)  
Tomas Tamfal (University of Zurich)  
Hiroshi Terada (NAOJ)  
Miles Timpe (University of Zurich)  
Neal Turner (JPL/Caltech)  
Claudio Valletta (University of Zurich)  
Merel van 't Hoff (Leiden University)  
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Susanne Wampfler (University of Bern)