

TRR 170 Summer School 2018

**‘Origin of
the Earth-Moon System’**

June 25 – 28, 2018



**Burg Reichenstein
Trechtingshausen
Germany**

SFB-TRR 170 Late Accretion Onto Terrestrial Planets

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“Origin of the Earth-Moon System”

(June 25-28, 2018)

Sunday, June 24, 2018

19:00 – 21:00 Icebreaker, Burg Reichenstein

Monday, June 25, 2018

1. Basics

09:00 - 09:40	Introduction to the Earth’s Moon: rocks, magmatism, concepts, terminology.	(Paul Warren)
09:40 - 10:20	Introduction to the Earth’s Moon: Geophysical basics and constraints.	(Julien Salmon)
10:20 – 10:45	<i>Coffee break</i>	
10:45 - 11:15	Comparison of the chemical composition of the Moon and the Earth.	(Paul Warren)
11:15 - 11:45	Stable isotopes I basics: source tracers and mass-independent isotope variations.	(Thorsten Kleine)
11:45 - 12:00	Discussion I & additional questions	(Speakers)
12:00 - 13:30	<i>Lunch</i>	
13:30 - 14:15	Stable isotopes II basics: tracers of mass-dependent isotope fractionation processes.	(Paul Savage)
14:15 - 15:00	Noble gas tutorial: He, Ne, Xe in the Earth.	(Rainer Wieler)
15:00 - 15:15	<i>Coffee break</i>	
15:15 - 16:00	Review - volatile element abundances and isotopic fractionation in Earth and Moon.	(Anne Peslier & Harry Becker)
16:00 - 16:15	Discussion II & additional questions.	(Speakers)
18:30 - 20:00	<i>Dinner</i>	

Tuesday, June 26, 2018

2. Lunar formation models in the light of geochemical and geophysical constraints

09:00 - 09:45	Review of Moon-forming impact scenarios.	(Julien Salmon)
09:45 - 10:10	Lunar volatile depletion and mass-dependent isotope fractionation.	(Paul Savage)
10:10 - 10:30	Post-impact lunar formation models.	(Julien Salmon)
10:30 - 11:00	<i>Coffee break</i>	
11:00 - 11:20	Constraints on lunar formation from nucleosynthetic anomalies.	(Thorsten Kleine)
11:20 - 11:30	Discussion III: Summary of constraints on giant impact models	(Kai Wünnemann & Speakers)
11:30 - 12:00	Lunar magma ocean – review of basics.	(Doris Breuer)
12:00 - 13:30	<i>Lunch</i>	

3. Lunar magma ocean processes and age constraints

13:30 - 14:15	Review - long-lived isotopes and ages of lunar magmatic rocks.	(Richard Carlson)
14:15 - 15:00	Review - lunar ^{142}Nd constraints and Lu-Hf model ages.	(Alan Brandon)
15:00 - 15:15	<i>Coffee break</i>	
15:15 - 16:00	Lunar magma ocean constraints from convection and mineral physics models.	(Sabrina Schwinger)
16:00 - 16:15	Discussion IV: Lunar magma ocean, chronology and secondary magmatism.	(Speakers)
18:30 - 22:00	<i>Barbecue in the Castle's Courtyard.</i>	

Wednesday, June 27, 2018

4. Core formation on Earth and Moon and early evolution of redox states

- 09:00 - 09:45 Review - accretion & core formation models Earth/Moon. *(Francis Nimmo)*
- 09:45 - 10:30 Review – chemical aspects of core formation. *(Esther Posner)*
- 10:30 - 10:45 *Coffee break*
- 10:45 - 11:15 Hf-W constraints on core formation. *(Thomas Kruijer & Francis Nimmo)*
- 11:15 - 11:30 Discussion V: Core formation models and processes. *(Speakers)*

5. The role of late accretion

- 11:30 - 12:00 Review – late accretion. *(Harry Becker)*
- 12:00 - 13:30 *Lunch*
- 13:30 - 14:00 Hf-W constraints on late accretion and lunar formation models. *(Thomas Kruijer)*

6. Terrestrial magma ocean

- 14:00 - 14:45 Review - constraints on Earth's final magma ocean. *(Esther Posner)*
- 14:45 - 15:00 *Coffee break*
- 15:00 - 15:45 Hf-W and ^{142}Nd constraints from terrestrial rocks. *(Richard Walker)*
- 15:45 - 16:00 Discussion VI: Late accretion & terrestrial magma ocean. *(Speakers)*
- 18:30- 20:00 *Dinner*

Thursday, June 28, 2018

7. Disk evolution and its influence on Earth-Moon composition

- 09:00 - 09:45 Celestial mechanics perspective on building materials and accretion. *(André Izidoro)*
- 09:45 - 11:00 Final Discussion VII: Brief summary/review of major constraints, issues and controversies including influence of the giant impact and late accretion on lunar structure, composition and chronometry. *(All participants)*

Summer School ends