



**The Venera-D Landing Sites and Cloud Habitability Workshop  
October 2–5, 2019**

**Preliminary Schedule as of 9/20/19**

For updated schedules and to receive instructions for remote participation, follow this url and enter your email address in the field where name is requested:

[https://docs.google.com/forms/d/e/1FAIpQLSc18x4oFAnOuDKuawdyQD\\_ljfkUJoQRu-1qYf9lPhR5uS\\_A/viewform](https://docs.google.com/forms/d/e/1FAIpQLSc18x4oFAnOuDKuawdyQD_ljfkUJoQRu-1qYf9lPhR5uS_A/viewform)

**Landing Site Theme**

**Day 1: 2 October 2019**

- 10:00–10:20      **Zeleny:** Welcome from Space Research Institute (IKI)  
Welcome from Roscosmos
- Ocampo and Zasova/Gregg and Zasova:** Welcome to Workshop

**LS-Session 1: Engineering/Conveners: Gregg and Kremic**

- 10:20–10:40      **Zasova:** Venera-D Update
- 10:40–11:00      **Sedykh:** The Venera-D Lander
- 11:00–11:20      **Eismont:** Venera-D Orbits, Landing Site Constraints
- 11:20–11:40      **Break**
- 11:40–12:00      **Gerasimov and Economou:** Venera-D Lander Payload Instruments
- 12:00–12:20      **Zelenyi and Polyansky:** Venera-D Cameras/TV
- 12:20–12:50      **Discussion**
- 12:50–12:55      **Gorinov and Jessup:** Logistics
- 12:55–14:00      **Lunch**

**LS-Session 2: Instruments and Simulations/Conveners: Gregg and Economou**

- 14:00–14:20      **Kremic:** LLISSE (Venera-D Long Life Element) and SAEVe (Potential Contributed Element)
- 14:20–14:40      **Treiman:** CheMin-V, A Definitive Mineralogy Instrument for Landed Science on Venus
- 14:40–15:00      **Schroder:** MIMOS II, Miniaturized Mössbauer Spectrometer for Venus Surface Investigation
- 15:00–15:05      **Izenberg:** APL's Venus Environment Chamber (AVEC) (*poster intro—lightning talk*)
- 15:05–15:10      **Kremic:** Glenn Extreme Environment Rig (GEER) (*poster intro—lightning talk*)
- 15:10–15:30      **Break (Scribe Meeting)**
- 15:30–16:30      **Discussion**

**LS-Session 3: What Do We Know Already?/Conveners: Gregg and Ivanov**

- 16:30–16:35      **Izenberg:** VEXAG Documents, 2019 Revisions (*poster intro—lightning talk*)
- 16:35–16:55      **Esposito:** VEXAG Landing Targets (2014 VEXAG Workshop)
- 16:55–17:15      **Economou:** What Do We Know About Venus Chemical Composition?
- 17:15–17:35      **Berger:** Surface-Atmosphere Interaction Influences on In-Situ Venus Surface Analyses
- 17:35–18:15      **Discussion**
- 18:15–18:30      **Day 1 Wrap-Up, Invitation to a.m. Posters**

## Day 2: 3 October 2019

### 9:00–10:00 *Poster Session in Main Meeting Room*

10:00–10:10 **Misha and Dima:** Welcome to Day 2 Oral Session and Logistics

### LS-Session 4: Landing Site Selection/Conveners: Economou and Kremic

10:10–10:30 **Titov:** Envision, European Concept of a Mission to Venus

10:30–10:50 **Rabinovitch:** Global Characterization of Safe Landing Sites Using Venera Panoramas and Magellan

10:50–11:10 **Ivanov:** High Priority of Tessera Terrain for In Situ Analysis

11:10–11:30 **Gregg:** Potential Landing Site Hazards in Venus' Volcanic Plains

11:30–11:45 *Break*

11:45–12:05 **Ernst:** Evaluation of Landing Site Targets in the Alpha Regio Quadrangle

12:05–12:25 **Byrne:** Mobile Crustal Blocks as Landing Site Targets

12:25–12:45 **Beauchamp:** Potential Landing Sites for a Complementary US Venus Flagship Mission

12:4–13:05 **Ernst:** Site Selection for Geological Testing of Global Warming Models on Venus

13:05–14:05 *Lunch*

14:05–14:25 **D'Incecco:** Olapa Chasma — Idunn Mons: Investigating Recently Active Terrains

14:25–14:45 **Treiman:** Cleopatra Crater: Granite Mountains and Tellurium Snow?

14:45–15:05 **Vonstad:** Interdisciplinary Testing of Venus Core Samples for Cost and Time Efficiency

15:05–15:25 *Break (Scribe meeting)*

15:25–17:30 *Discussion (Panel lead by Noam Izenberg)*

17:30–18:30 **Workshop Welcome Reception in the Exhibition Hall**

## Cloud Habitability Theme

### Day 3: 4 October 2019

10:00–10:10 **Elyena, Limaye, and Jessup:** Welcome to Day 3 Oral Session

### CH-Session 1, Session Title Habitability at Venus/ Conveners: Jessup and Zasova/Kotsyurbenko

10:10–10:30 **Way:** Ancient Venus Climate and Observational Constrains

10:30–10:40 **Goldman:** *Venus as an Exoplanet (poster intro–lightning talk)*

10:40–11:00 **Limaye:** Case for Search of Bio-Signatures on Venus

11:00–11:20 **Cockell (remote):** The Habitability of Venus' Clouds, What Do We Need to Know?

11:20–11:40 **Kotsyurbenko:** Terrestrial Microorganisms from Extreme Environments as Analogues to Hypothetic Microbial Forms Inhabiting Venus' Clouds

11:40–12:00 *Break*

12:00–12:20 **Grinspoon (remote):** Considerations of Energy, Biomass Limits and Cloud Microphysical Implications of a Putative Venus Cloud Biosphere

12:20–12:40 **Kompanichenko:** Evaluation of Possible Origin of Life in Early Venus in Case of Available Liquid Water

12:40–13:00 **VSnytnikov:** Chemical Basis of a Hypothetical Life on Venus

13:00–13:05 **Jessup and Gorinov:** *Logistics*

13:05–14:10 *Lunch*

### CH-Session 2, Session Viability (Candidates and Processes)/Conveners: Limaye, Elyena, and Kotsyurbenko

14:10–14:30 **Tverdislov:** Physical principles as the basis for the formation of chemical tools and biological functions of living systems

14:30–14:50 **Cordova:** Investigating the Viability of Microorganisms in a Venus Cloud Analog

14:50–15:10 **Mogul:** Venus' Spectral Profiles and the Potential for Microbial Life in the Clouds

15:10–15:30 **Husain Ansari:** UV-absorbance and survival mechanism of potential bacteria in Venus clouds

15:30–15:50 **Bullock (remote):** Venus atmospheric chemistry and possible metabolic pathways for microbial organisms  
(pending)

- 15:50–16:10 **Milojevic:** Metallophilic Extreme Thermoacidophiles: Potential Biosignatures in the Venusian Clouds
- 16:10–16:30 Break (Scribe Meeting)
- 16:30–18:00 Discussion
- 18:00–18:30 Day 3 Wrap-Up, Invitation to a.m. Posters

#### Day 4: 5 October 2019

9:00–10:00 *Poster Session in Main Meeting Room*

10:00–10:10 **Zasova and Kotsyurbenko:** Welcome to Day 4 Oral Session

#### CH-Session 3, Session Origin and Survivability/Conveners: Limaye, Elyena, and Oleg Kotsyurbenko

10:10–10:30 **Kruchkova:** High Stability of Mycobiota from Desert Soils to the Impact of Ionizing Radiation (100 kGy) at Low Temperature and Pressure

10:30–10:50 **Pavlov:** Permanent Infecting of the Venus Upper Atmosphere by Transfer of Terrestrial Microorganisms Through the Ejected Dust Particles from Earth and Mars

11:50–11:10 **Patel:** Habitability of the Cloud Layers from a UV Perspective

11:10–11:15 Logistics (pizza money collection)

11:15–11:35 Break

11:35–13:30 Discussion Over Pizza Lunch in Main Session Room

#### CH-Session4, Session Detection Mechanisms/Conveners: Limaye and Jessup

13:30–13:50 **Smith:** Methods for Sampling Bioaerosols in Earth's Troposphere and Stratosphere

13:50–14:10 **Gentry:** Bioaerosol Sampling Considerations for In Situ Analysis

14:10–14:30 **Sasaki:** Life-Signature Detection Microscope for Cloud Layer Particles

14:30–14:50 **Stowik:** Observation of the Life Cycle of Extremophilic Bacteria of the Genus Acidophilus Under the Conditions of the Reconstituted Venus Atmosphere

14:50–15:00 Break

15:00–15:20 **Bradburne (remote pending):** Automated, In-Situ Microfluidic Sample Preparation for Amino Acid Detection

15:20–15:35 **Baines:** Aerosol Mass Spectrometer for Characterizing the Venus Cloud Habitability Zone

15:35–15:50 **Rabinovitch:** Aerobots to Explore Venusian Clouds

15:50–16:10 **Martynov:** Venera-D: Spacecraft and Orbits

16:10–16:30 Break (Scribe Meeting)

16:30–18:20 **Panel Lead by Voytek, Jessup, and Kotsyurbenko:** Discussion of Big Questions

18:20–21:00 Celebratory Dinner

#### Posters:

**Zasova, et al.** The Venera-D Mission Concept Fact Sheet

**Gilmore, et al.** NASA Venus Flagship Mission Concept

**Hall, et al.** The NASA Aerial Platform Study: Aerobots to Explore Venusian Clouds

**Izenberg, et al.** APL's Venus Environment Chamber (AVEC)

**Izenberg, et al.** Venus Exploration Analysis Group (VEXAG) Roadmap Documents

**Kremic, et al.** Glenn Extreme Environment Rig (GEER)

**Belov** Multiple Stress-Tolerance of Culturable Bacteria from Extreme Habitats: Astrobiological Implication

**Goldman** Venus as an Exoplanet

An archive of the workshop abstracts for the Landing Site theme may be found here:

[http://venera-d.cosmos.ru/uploads/media/Landing\\_Sites.zip](http://venera-d.cosmos.ru/uploads/media/Landing_Sites.zip)

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