



Technology Challenges for Future Exploration of Venus

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http://www.lpi.usra.edu/vexag/tech_challenges.pdf

Technology Challenges

Surface or near surface activities

350 to 470°C

90 bar surface pressure

corrosive environments

~1 day to as much as a year or more

Multi-use technologies



- Hi-T, Hi-P components also suitable for deep entry probes on gas giants
- Telecommunications capabilities also useful for other missions
- Sample analysis techniques and seismology also translatable to other terrestrial planet and icy satellite missions

Priority short duration technologies (hours to days)

- Passive cooling systems for communications/instruments (470°C, 90 bars) for >1 Earth day
- High-temperature electronics
- Balloons with vertical and horizontal mobility
- Precision landing capability
- Autonomous hazard avoidance
- High-data-volume communications systems
- Chemical analysis – hi-T extraction and handling capability

Priority long duration technologies (months to years)

- Active cooling systems
- Hi-T power systems
- Long-lived balloons
 - corrosion and ΔT
- Seismometers
 - Ground coupling, winds, T/P issues, triggering
- Heat-flow measurements
 - Drilling, hi-T electronics