



# Piezoelectric microvalve for atmospheric descent sampling

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**Target:** All planetary bodies with atmospheres

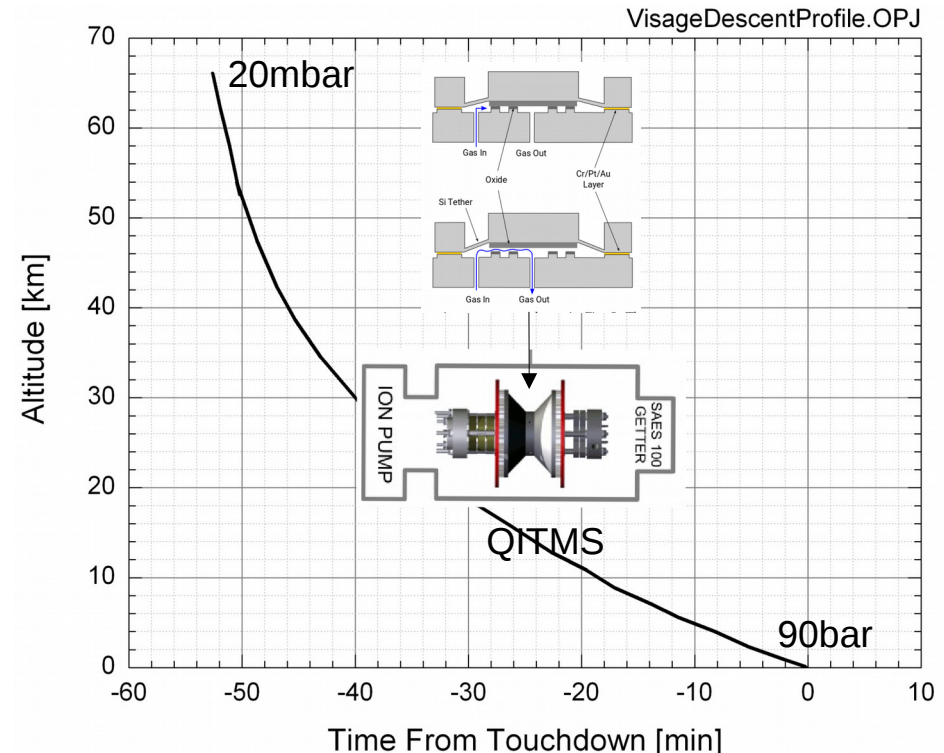
## Science:

- Gas compositions of Venus' atmosphere
- Gas composition of Saturn's atmosphere
- Noble gas ratios of Venus' and Saturn's atm.
- Trace gas molecules, ppb levels of Venus' and Saturn's atmospheres.
- Descent profile of all the species mentioned above, measured every 2 minutes.

## Objectives:

- Fabricate miniature piezoelectric valve to enable optimal operation of QITMS in broad pressure range
- The valve should operate up to 100bar (Venus)
- The valve should operate between 0°C and 125°C
- The leak rate of the valve should not exceed  $2 \times 10^{-6}$  mbar l/s when operating at max pressure.

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## Key Milestones:

- Fabricate piezoelectric valves according to original design
- Setup the testing platform with syringe pump and QITMS
- Fabricate modified "hard seat" type piezoelectric Valves
- Fabricate modified "soft seat" type piezoelectric Valves

TRL (3) to (4)