

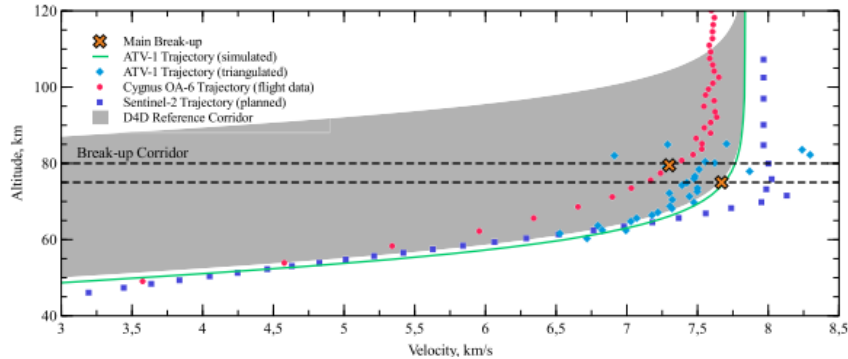
University of Stuttgart
Institute of Space Systems



Destructive Re-entry Experiments under Thermal and Mechanical Loads

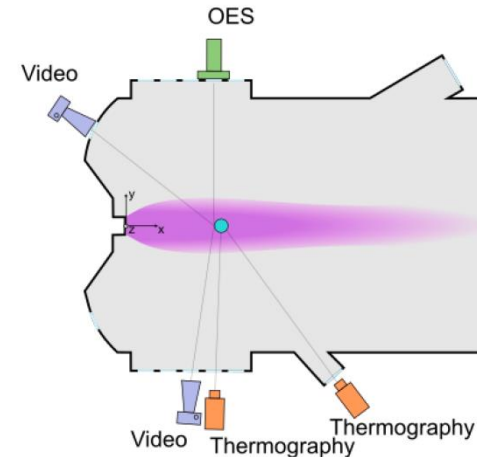
S. Loehle, D. Leiser, D. Kuenstler, C. Mueller

Aerothermal + Mechanical Load

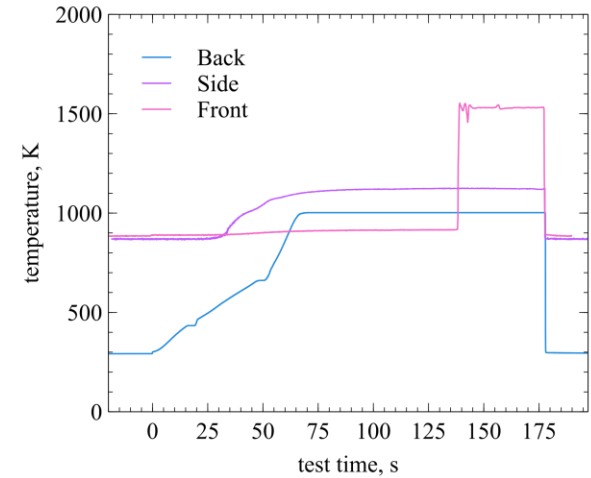
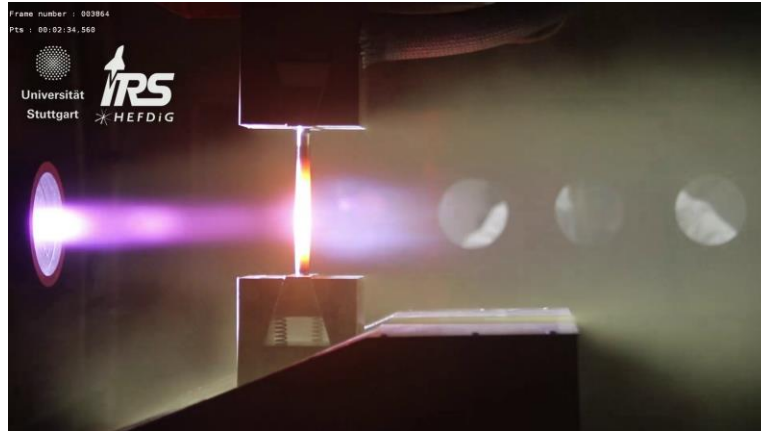
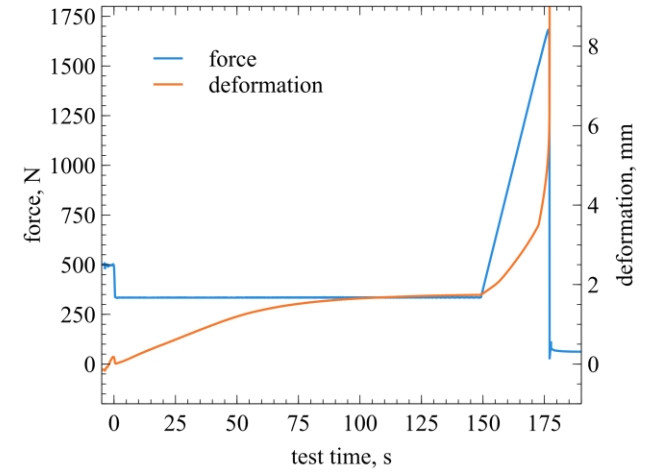
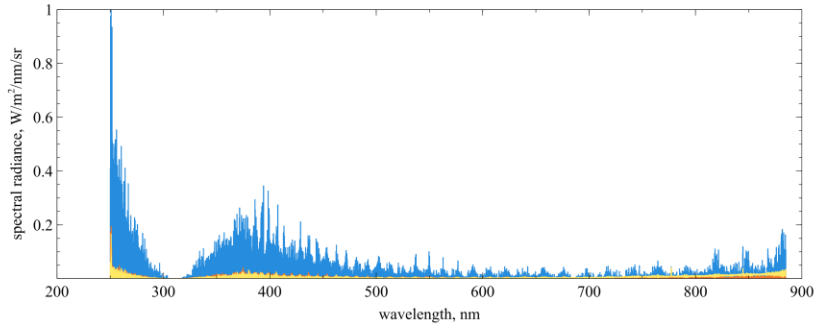


Aerodynamic Forces result in mechanical load:

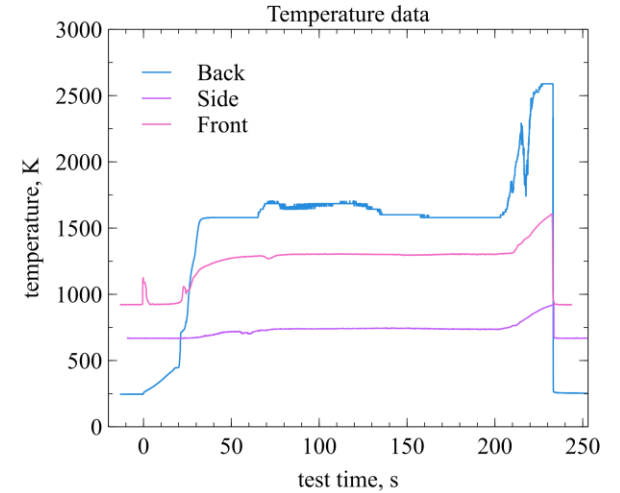
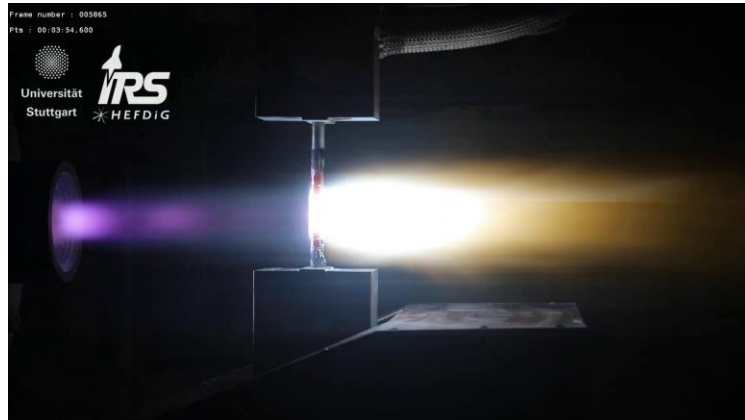
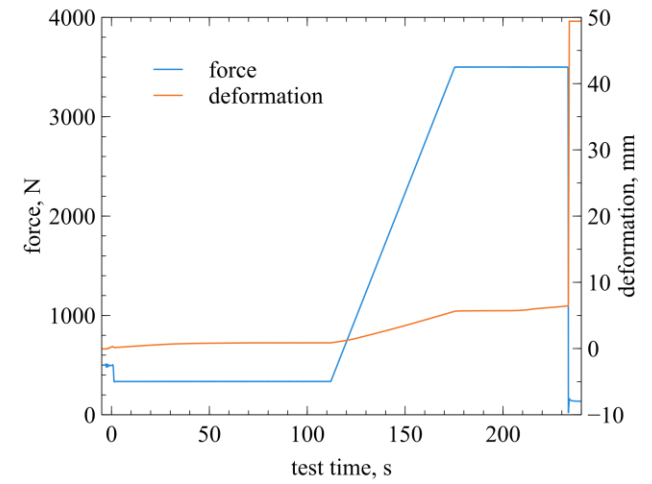
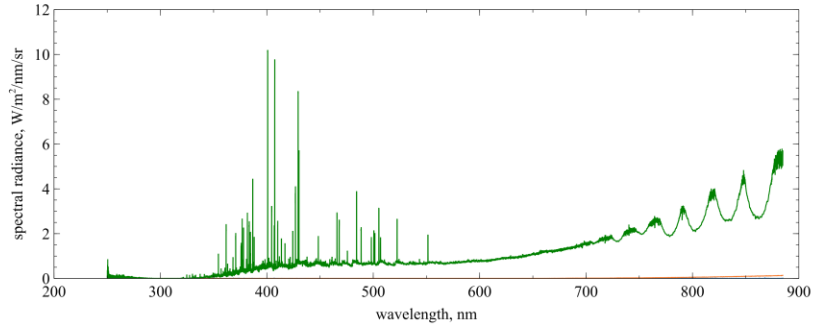
- Additional load cylinder
- Loads derived from aerodynamic data
- Translation to ground using LHTS



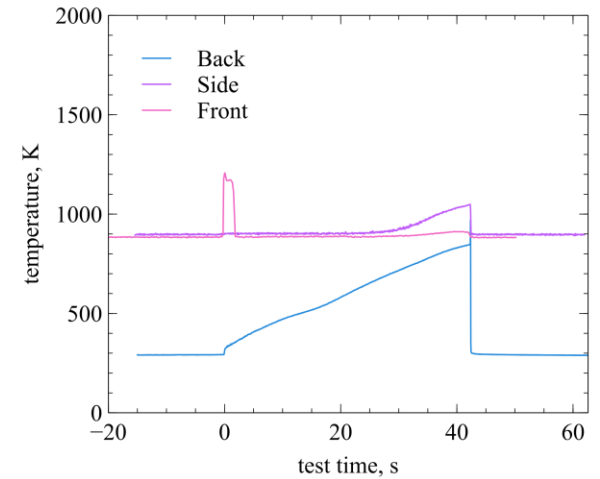
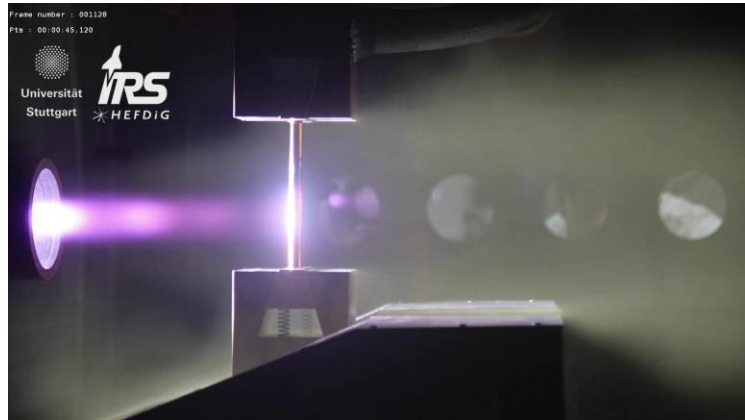
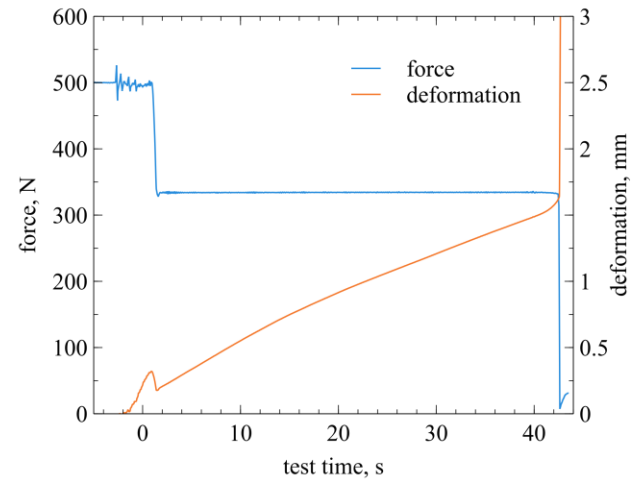
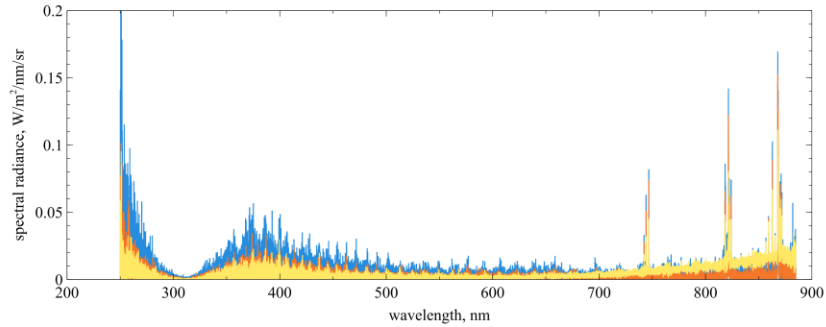
Inconel 625



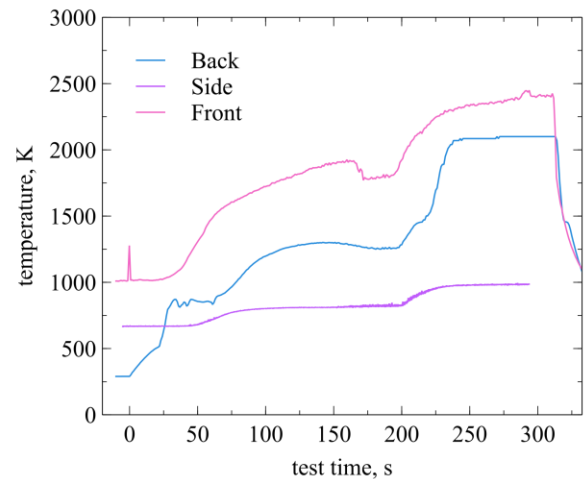
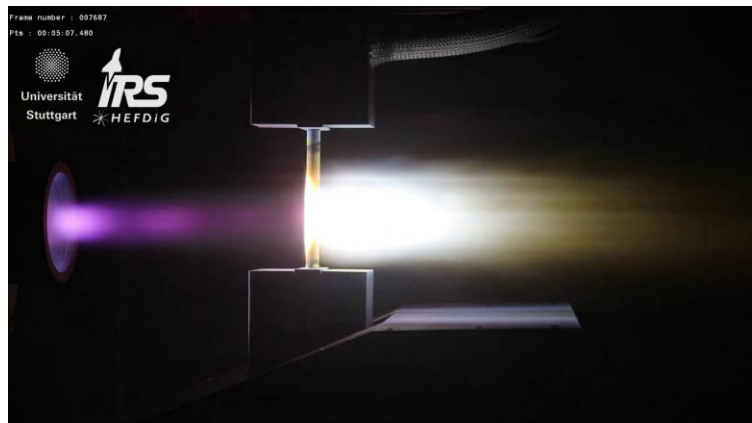
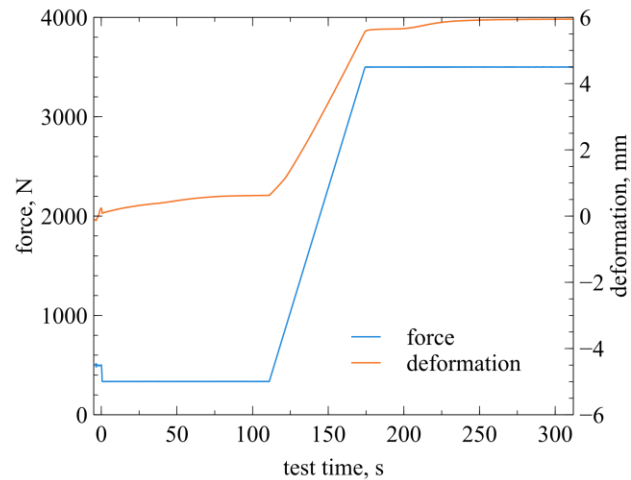
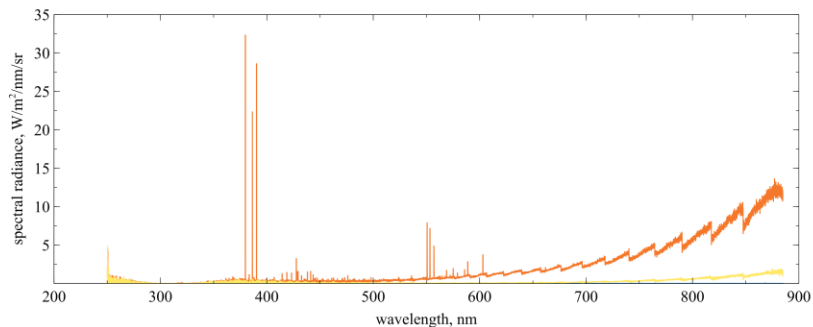
Tungsten-Copper



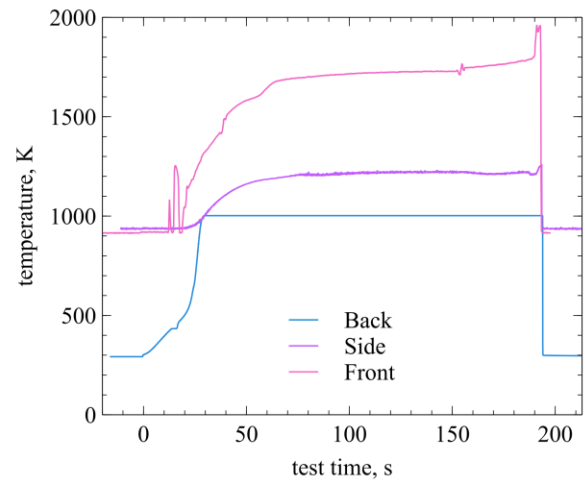
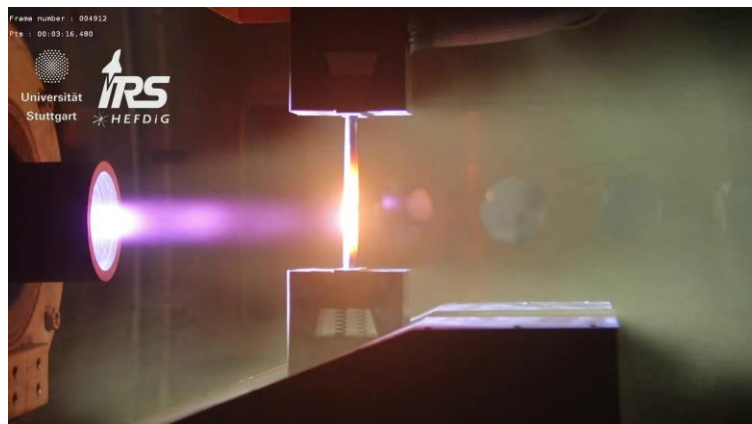
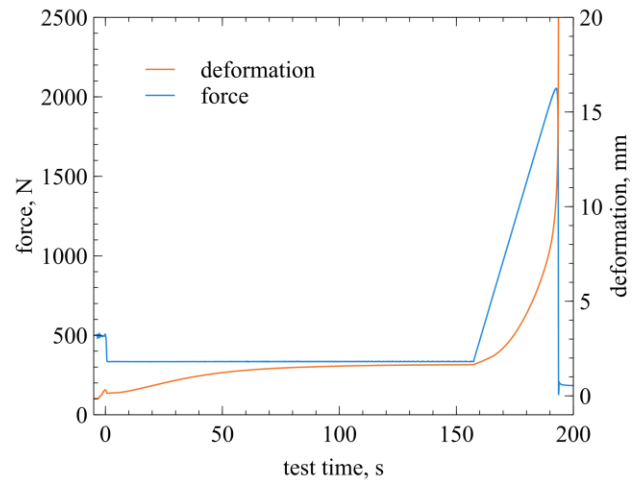
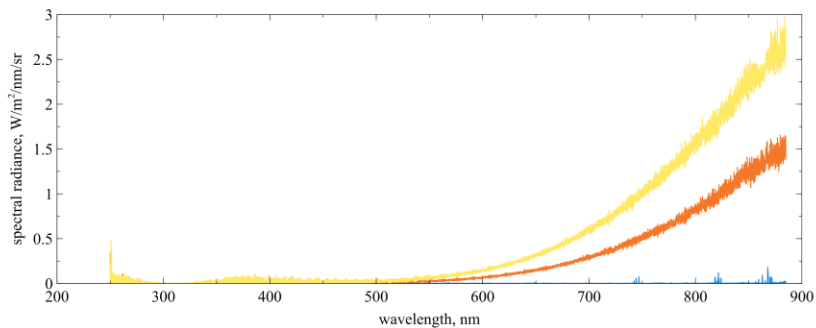
Copper-Beryllium



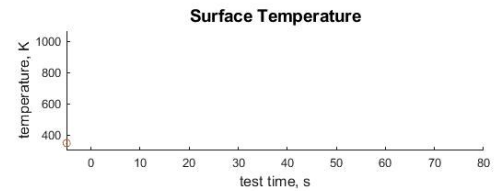
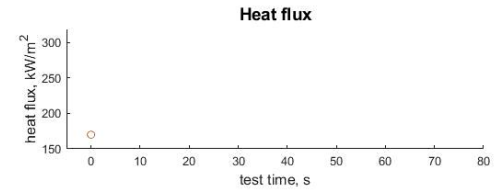
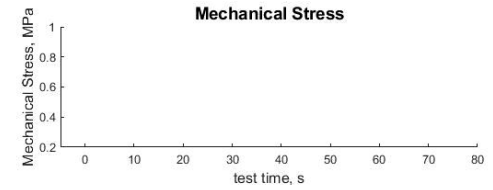
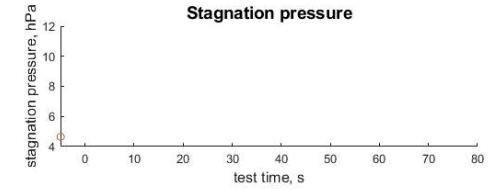
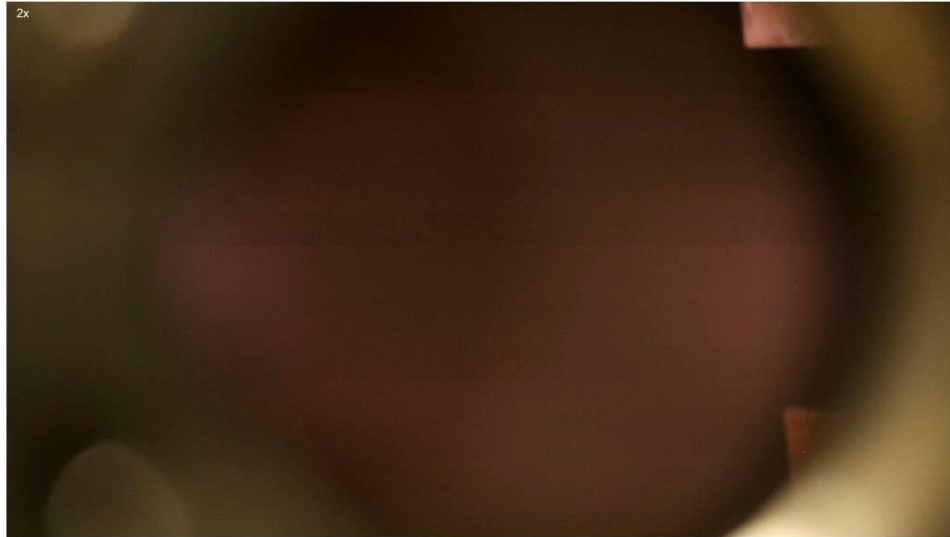
TZM



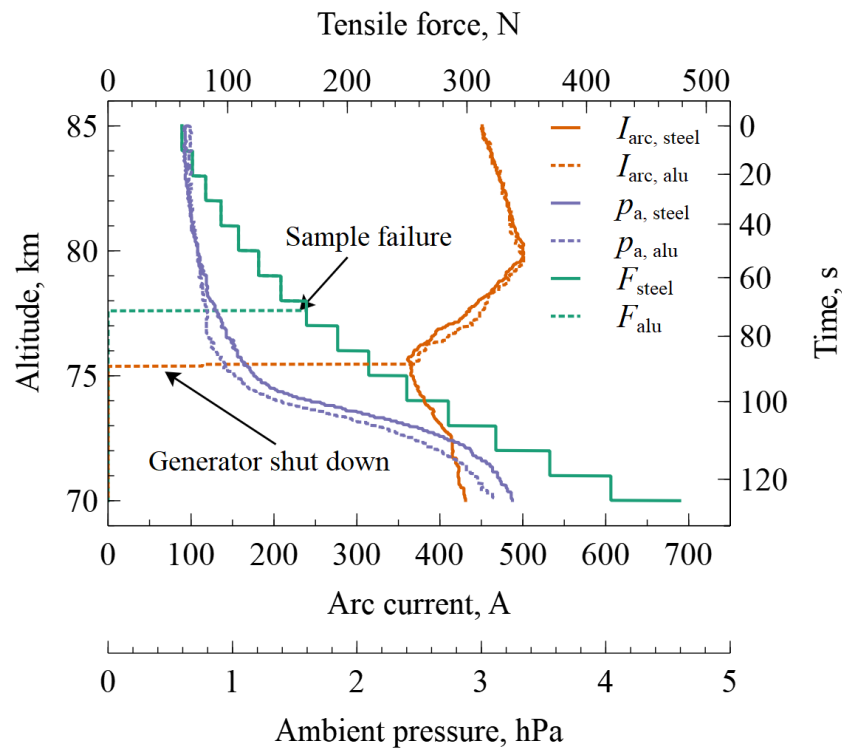
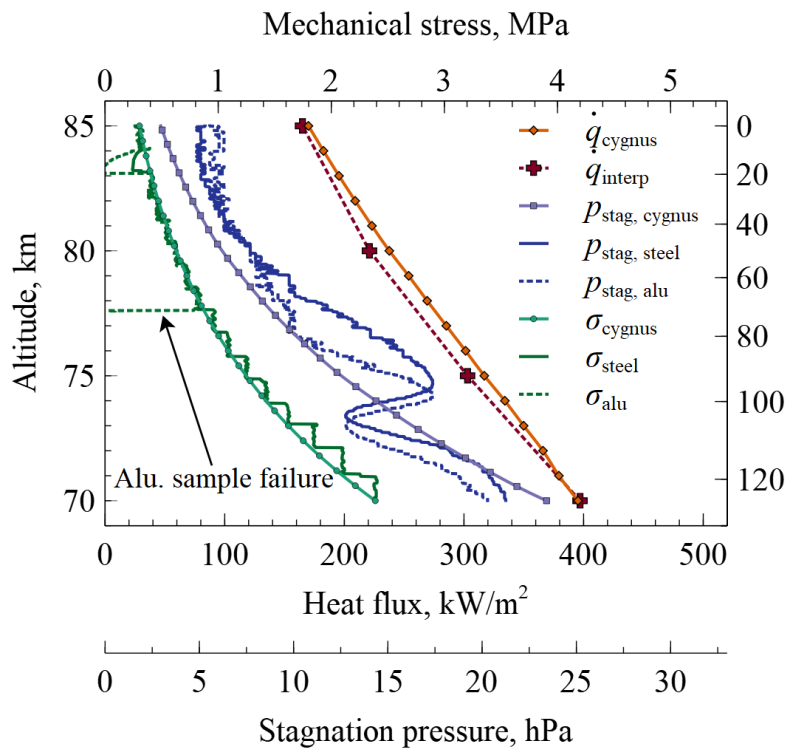
Invar



Transient testing



Transient



Transient testing

Transient heat flux measurement



Determination of heat flux distribution



Thank you!



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All tools were used in the development of post-processing scripts. All underlying data, physical models, and scientific interpretations were developed independently by the authors.

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