EURECA – EUnorpean REtrievable CArrier

- Unmanned research platform with 15 experiments from ESA
- Orbit at an altitude of 508 km
- Payload: automatic material science cells and small telescopes for solar observation
- EURECA was planned to be sent to space 5 times within 10 years, this planned re-use of EURECA did not take place

Deployment
- Atlantis space shuttle 01.08.1992
- Endeavour space shuttle 01.07.1993

Recapture
- Swiss Museum of Transport November 2000
- Satellite at Empa August 2016

EURECA at Empa - X-ray analysis on multiple scales

Results

Experiment Module:
- Furnaces
- Linac ICT 450kV 100x100x151μm³

CFRP struts
- Cross-section:
- Outer diameter: 65mm
- Thickness: 3mm

Crack formation by:
- Extreme temperature gradients in space
- Extreme temperature gradients inside & outside the furnace (Tmax=1400°C)
- Differences in thermal expansions inside the female screw & above
- Stress formation in material (Ti/Al) → stress relaxation, grain size changes, …

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