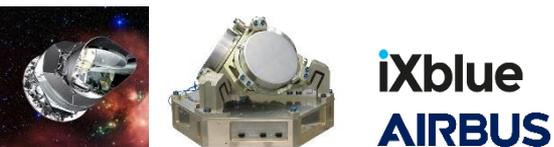


Specialty Optical Fibres for Space Applications

Iain Mckenzie

EPIC Virtual Workshop on Specialty Optical Fibres 18/01/2021

Space a Niche Market for Specialty Optical Fibres



FOG

- Radhard Er-doped fibres
- Radhard PM fibres



ISS

- data communication fibres

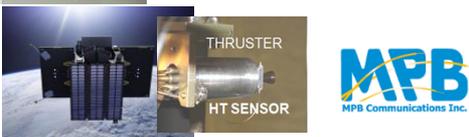


SMOS

- Clock distribution and digital communication
- Future digital telecom processors 12.5 Gbps and above



Optical Communication Terminals - Yt and Er-doped fibre amplifiers



PROBA 2 – FSD SHEFEX II – re-entry



Optopyro – Ariane 6 Launcher

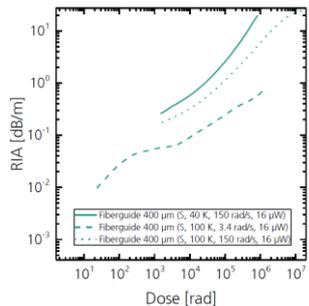


Space Environment Challenge – Juice Mission



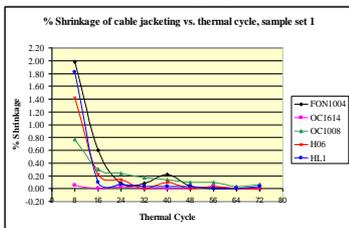
Radiation Induced Attenuation (RIA)

20MRad TID



Thermal

-190 to 100 °C



Shock – 1600g 3 axis

Vibration – Random 22grms

Vacuum Compatible – low outgassing

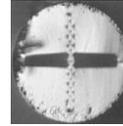
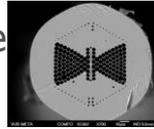
Non-magnetic



Research



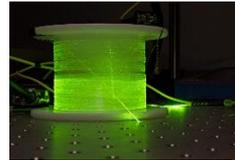
Micro-structured fibers - high temperature pressure sensor



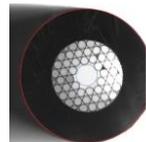
Cryogenic Sensor – coatings to enhance thermal sensitivity of FBGs



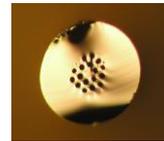
Custom radhard Er doped fibres for stabilized frequency combs



Hollow core and MCF for FOGs



DARWIN mission - Optical Nulling single mode operation from 4-20 microns



Open for collaboration



Visit ESA's industry portal and discover how to be part of the next 50 years of cooperation:

http://www.esa.int/About_Us/Business_with_ESA/How_to_do

Learn more about space optics visit the International Conference on Space Optics website to access past proceedings:

<http://www.icsoproceedings.org/>

Join ESA at the next ICSO conference **VIRTUAL**, 30th March-2nd April 2020, Crete



Bi-annual Meeting: Space Optics Community and exchange information and ideas on the Research, Development, Qualification and Flight Experience



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COOPERATION AND INNOVATION

