

# Fiber Optic Sensors

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**PHOTONEXT**  
RESEARCHER'S DAY 2023




Politecnico  
di Torino



# Main Goals

 Monitoring of hyperthermal and laser ablation tumor treatments.

 Real-time monitoring of high-dose tumor radiotherapy.

 Environmental and infrastructural monitoring.

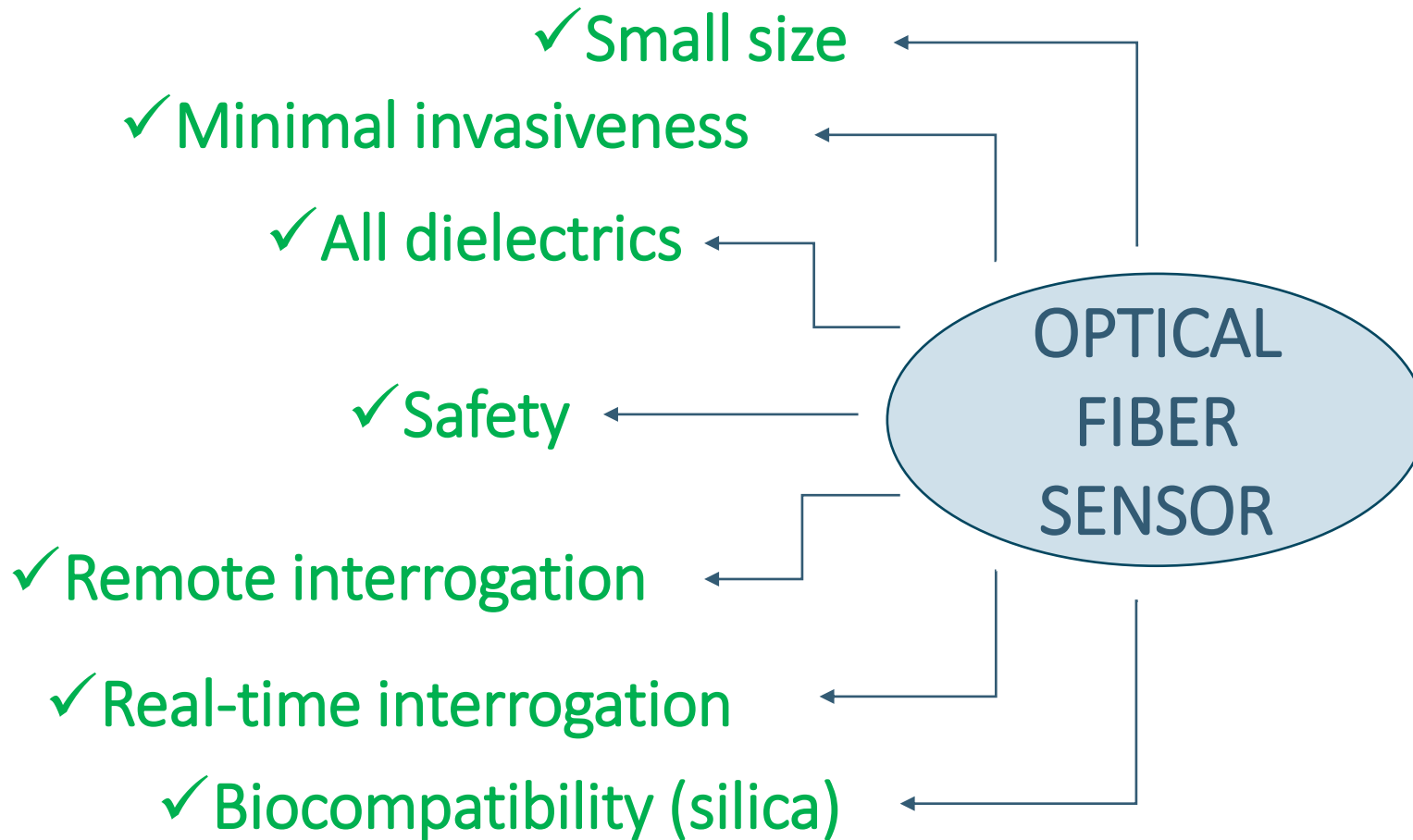


# Why optical fibers?

OPTICAL  
FIBER  
SENSOR

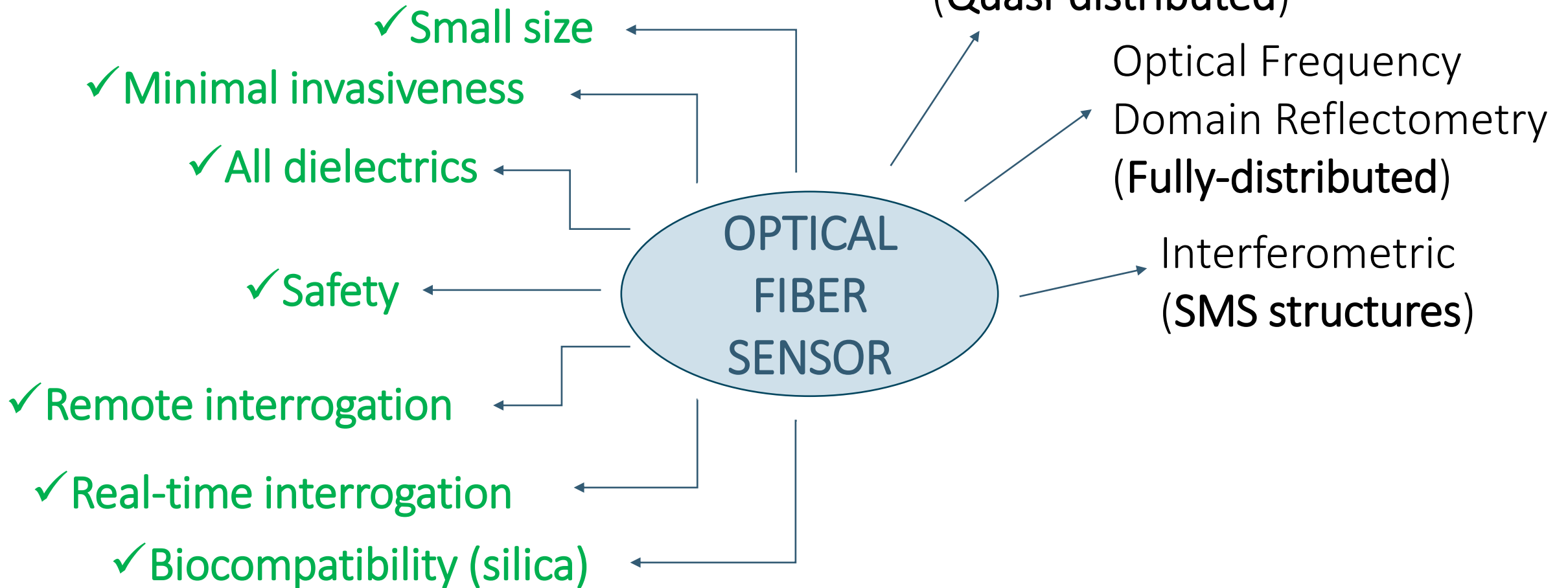


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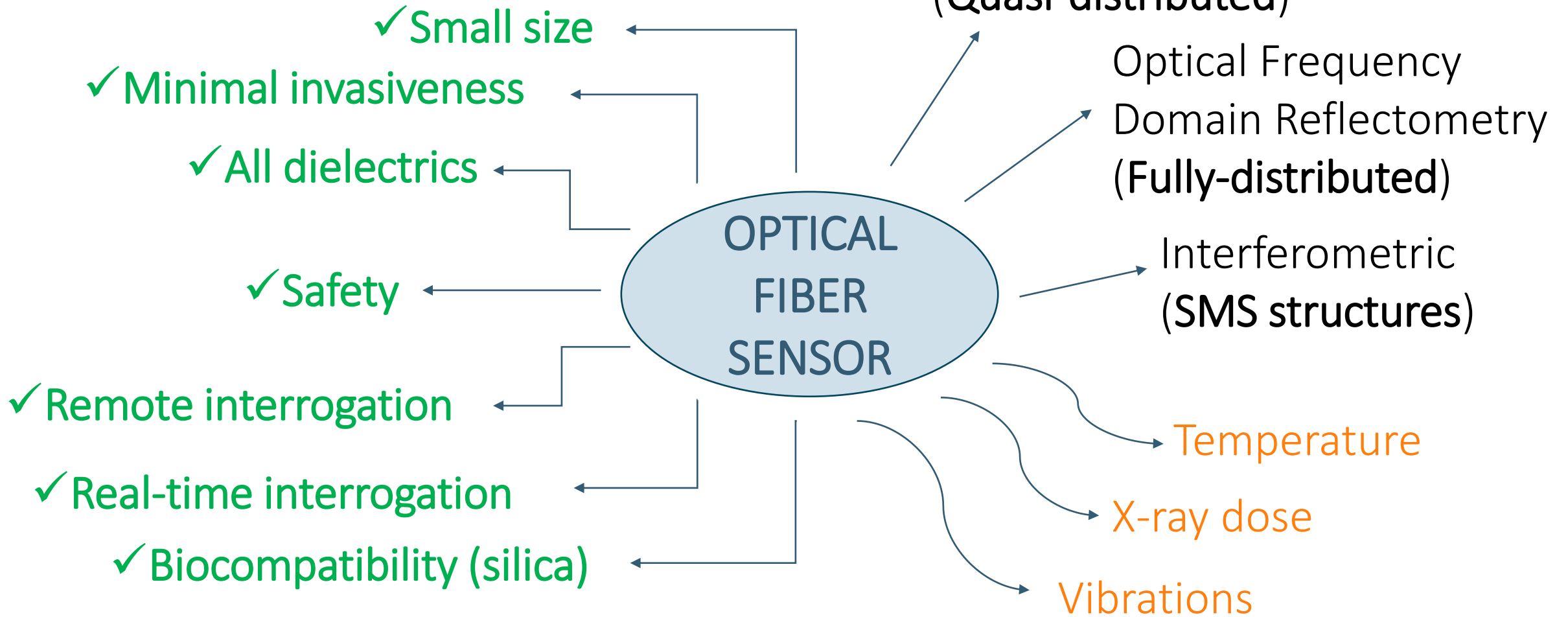


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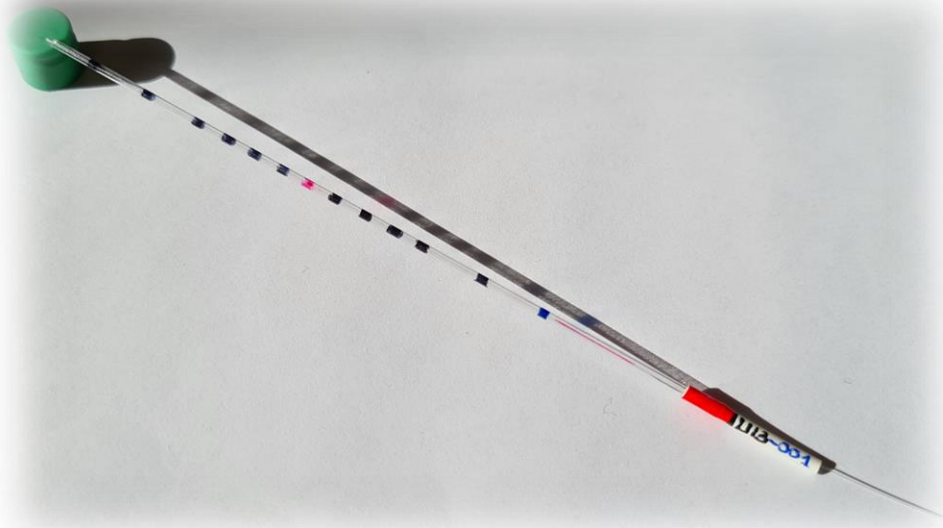


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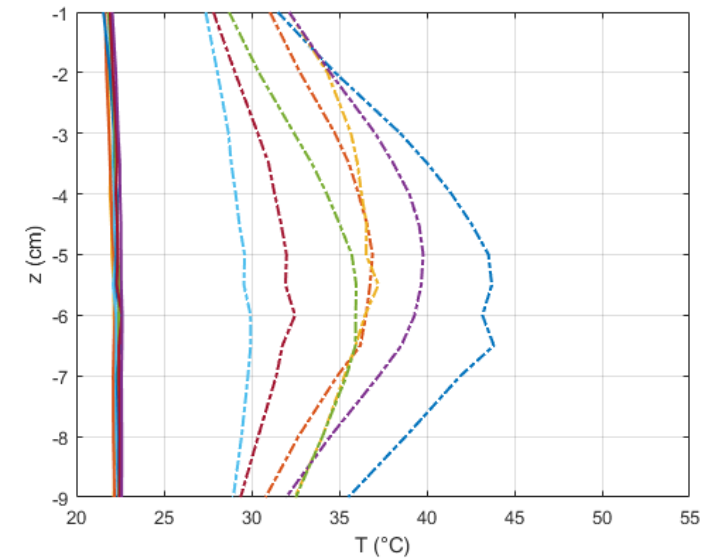




# High Accuracy Temperature Sensors

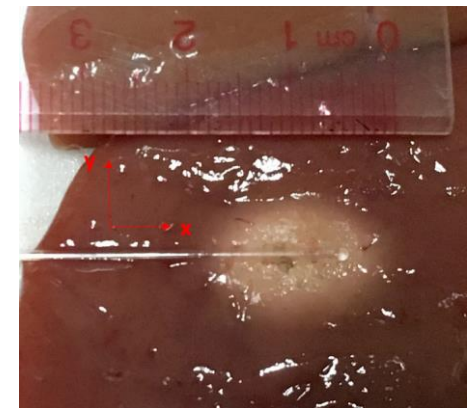


Microwave hyperthermia



Suitable for **quasi-distributed** sensing, also in presence of large gradients (**custom spacing** and **1mm gauge** length,  $\pm 0.2$  °C error).

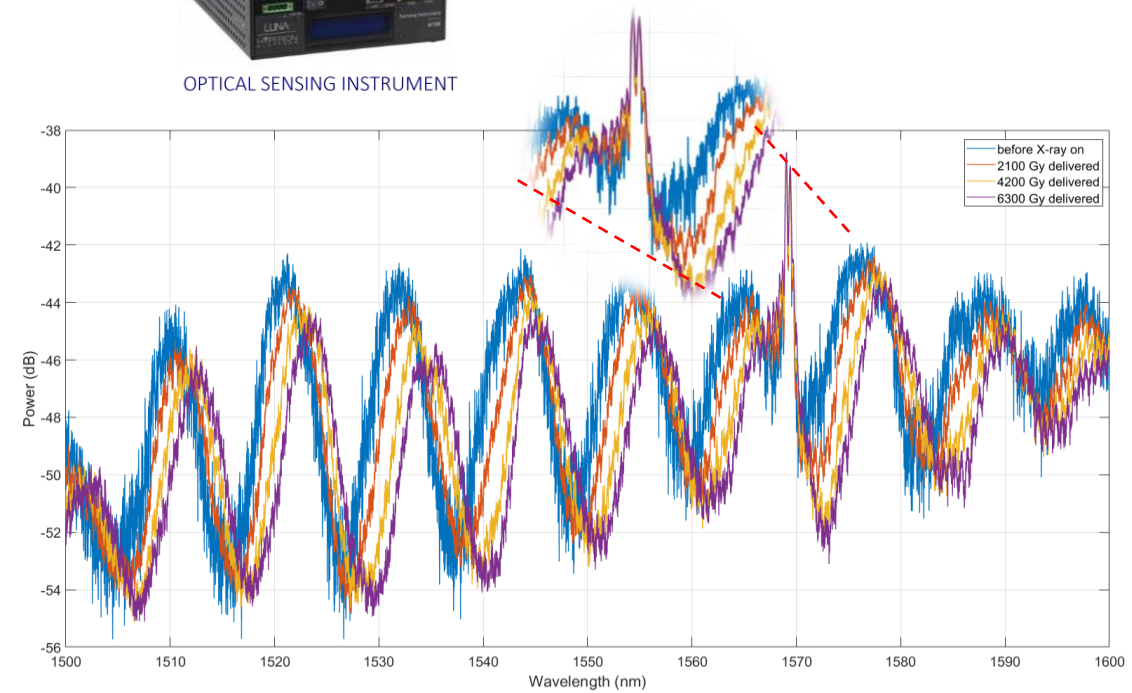
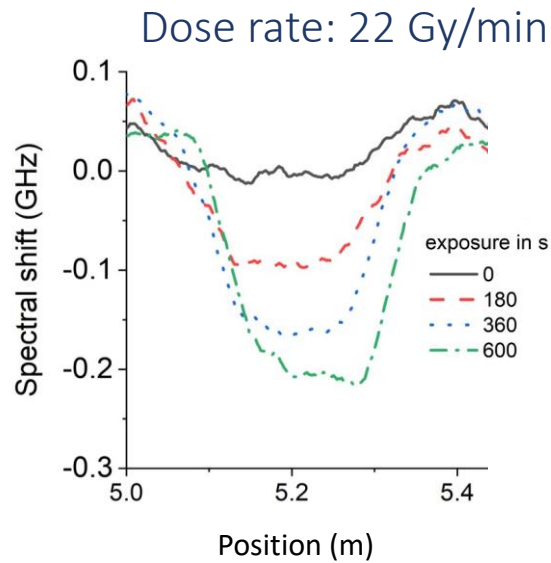
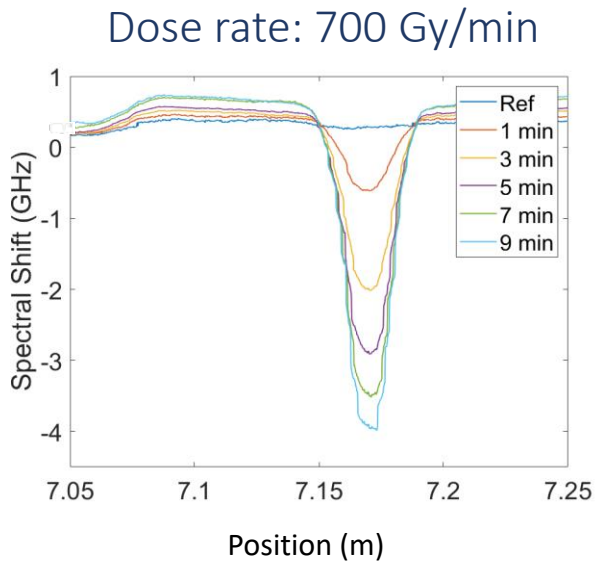
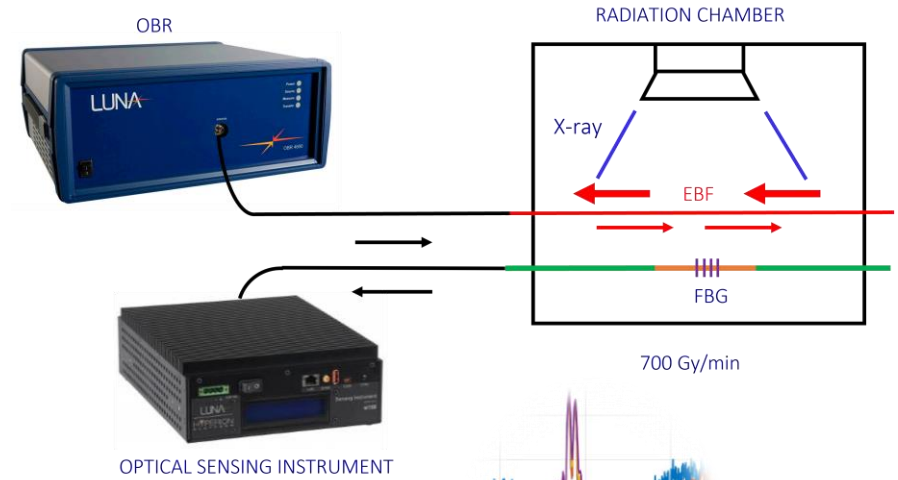
Laser ablation





# Optical Dosimeters

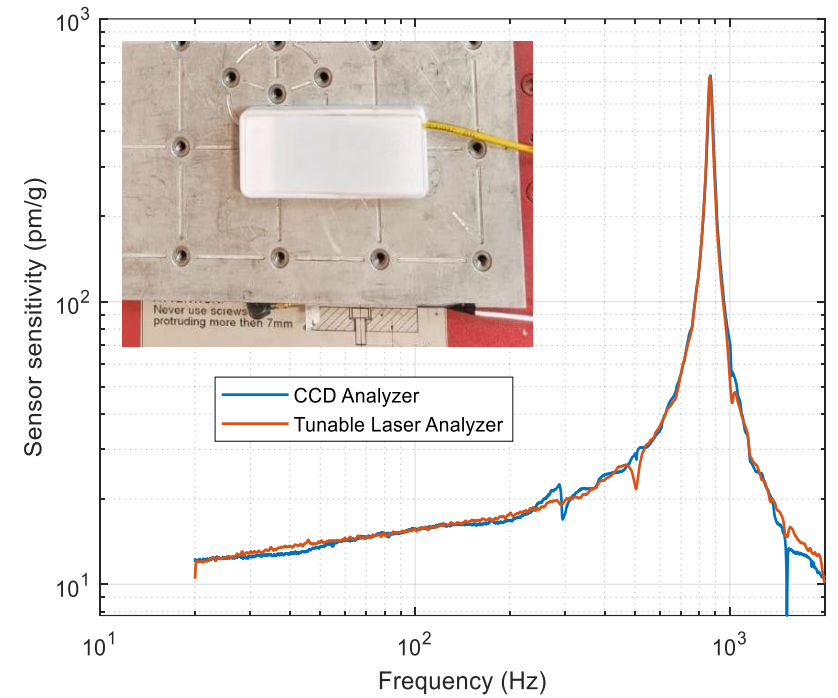
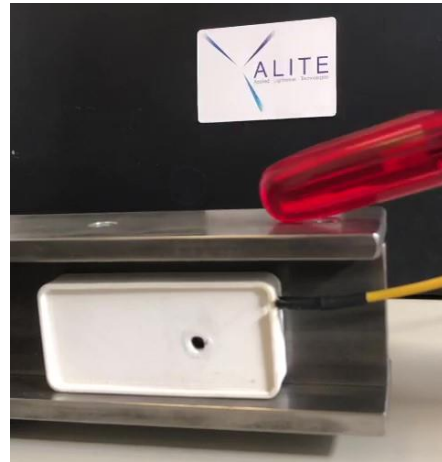
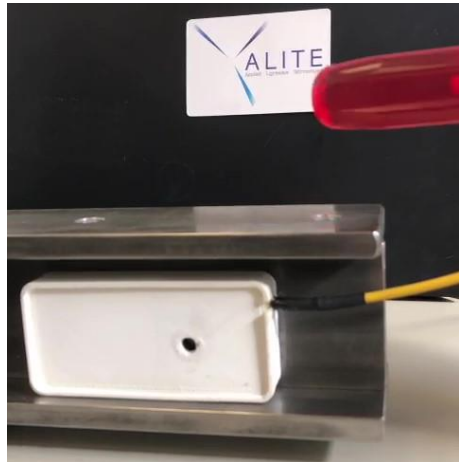
Distributed and point sensors for the real-time measurement of the spatial distribution of the delivered dose using enhanced sensitivity nano-particle doped fibers.



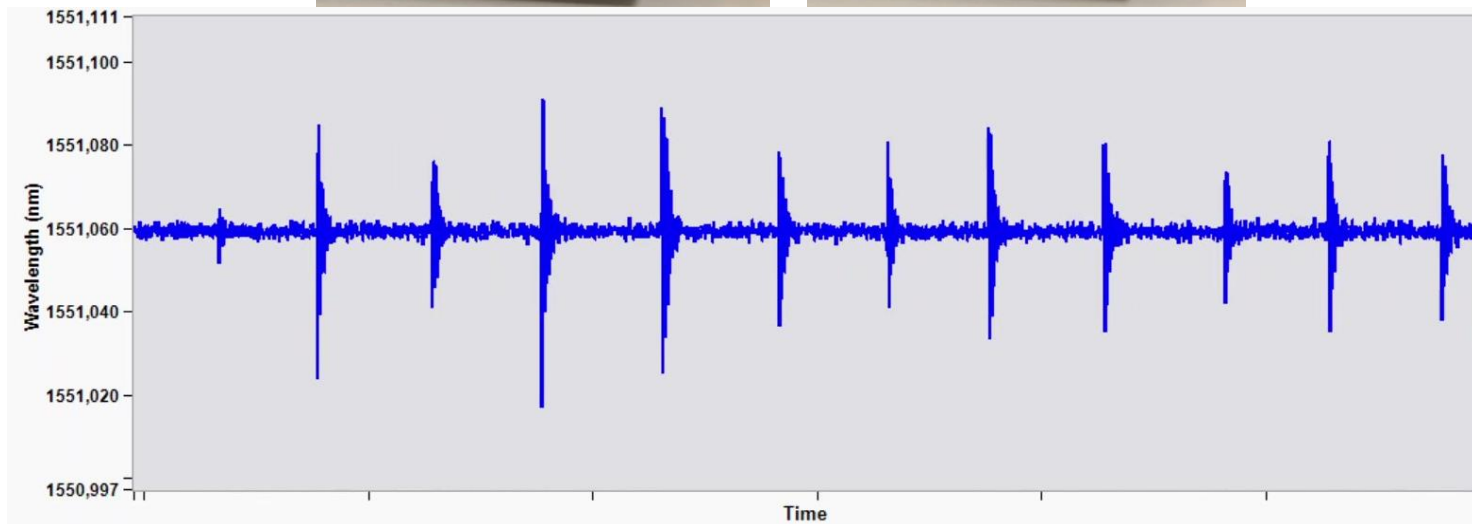




# Vibration Sensors



- All-fiber accelerometers.
- Analysis of the impact of different interrogating approaches.



Thanks for your attention



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