

Applications for and Advancements Towards a Deployable Emergency Response Dosimetry System (ERDS)

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This poster presentation will feature Global Resonance Technologies, LLC's and NIST's ongoing efforts to realize an affordable and deployable Emergency Response Dosimetry System (ERDS). ERDS is designed to support determinations of military force and responder readiness and augment the triage process in the aftermath of a no-notice mass exposure nuclear event. Applications of ERDS in the commercial industrial sterilization field will also be discussed, as well as recent progress made on this front.

ERDS uses an electron spin resonance-based 'reader' to rapidly measure the received dose in dosimetric materials, such as alanine pellets, embedded in ubiquitous artifacts such as government issued ID cards. The 'reader' is composed of custom-designed permanent magnets, a non-resonant transmission line ID card probe, and a highly sensitive microwave interferometric detection scheme. This approach leads to a robust deployable system with the demonstrated capability of rapid self-discrimination at the $2 \text{ Gy} \pm 0.5 \text{ Gy}$ level. This level of dose precision will yield clinically relevant information to help guide evacuation and medical treatment decisions post-event.

Next steps and challenges in the development process will also be reviewed. This will include discussions of miniaturizing the 'reader' components, refining the dosimetric pellet composition, reducing the 'reader' cycle time, and reducing background noise related to card materials.

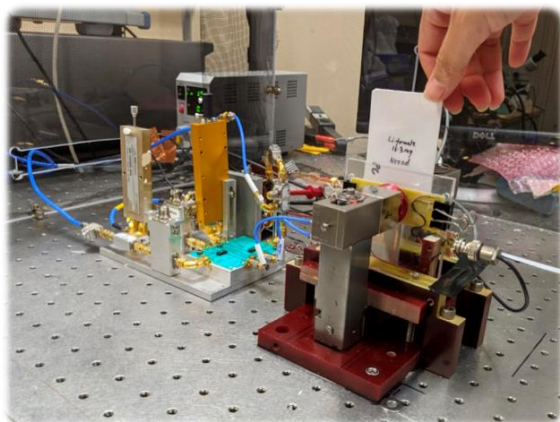


Figure 1:
Benchtop testing of ERDS.



Figure 2:
Example rendering of a deployable ERDS 'reader'.