

Development of an Integrated Real Time Dosimeter for Assessment of Radiation Exposure with Potential Tissue Damage Assessment among Radiation Professionals

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Novelty :

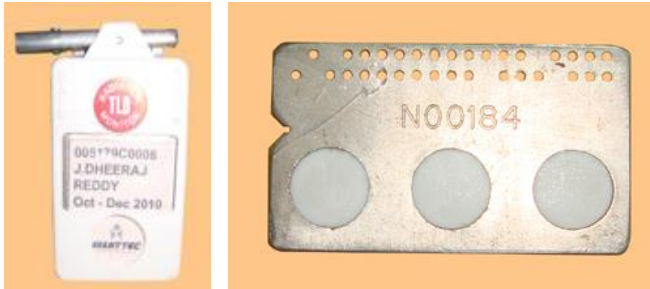
- Simultaneous measurement of radiation exposure and radiation induced potential tissue damage
- Wireless and handy wearable device interfaced with smart phone
- Instant digital readout with inherent alarm system to alert the user
- Actual dose delivered recorded with date and time, Cumulative dose
- Proven, non invasive, immediate, complementary method of tissue damage assessment

Potential Benefits : - Instant knowledge of radiation dose exposure and potential tissue damage

- Sensitive to even low doses
- User friendly and Self assessment
- Monitoring radiation leakage
- Low cost

The Problem, Need and Solution

Existing Radiation Monitoring Devices (BARC)



Limitations

- Instant readout is not possible
- Technique is sensitive, trained personnel, additional costs
- No permanent record
- Less reliable with time and use
- Tissue damage assessment feature not available.

Need: To overcome the existing limitations

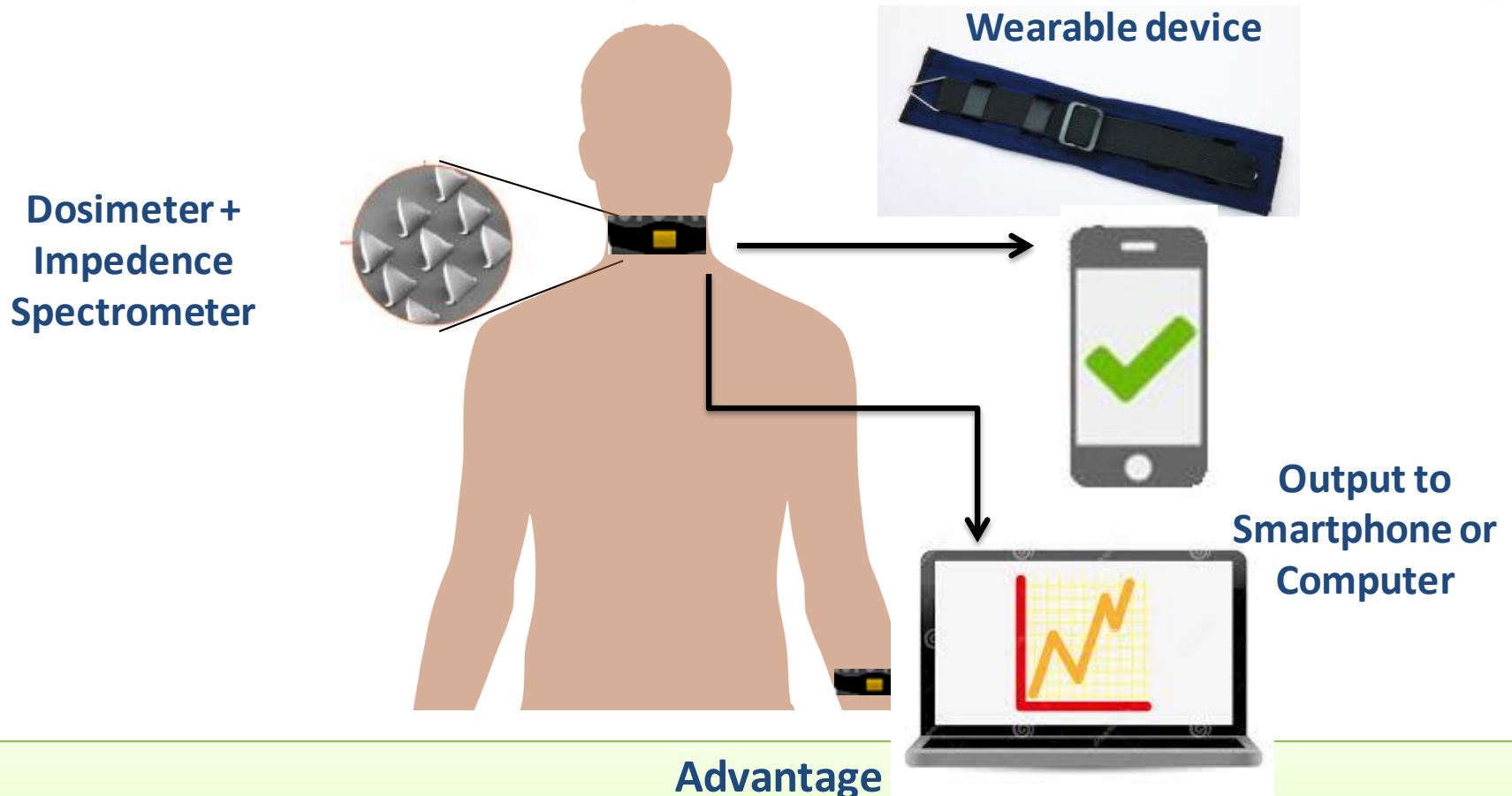
Opportunity

The Product is beneficial to

- Radiation Professionals – Health care professionals involved in
diagnosis and therapeutics
- Radiology technicians
- Radiation workers

The Proposed Solution

**A Novel Integrated Real Time Device For Measuring Radiation Exposure
And Assessing Radiation Induced Potential Tissue Damage**



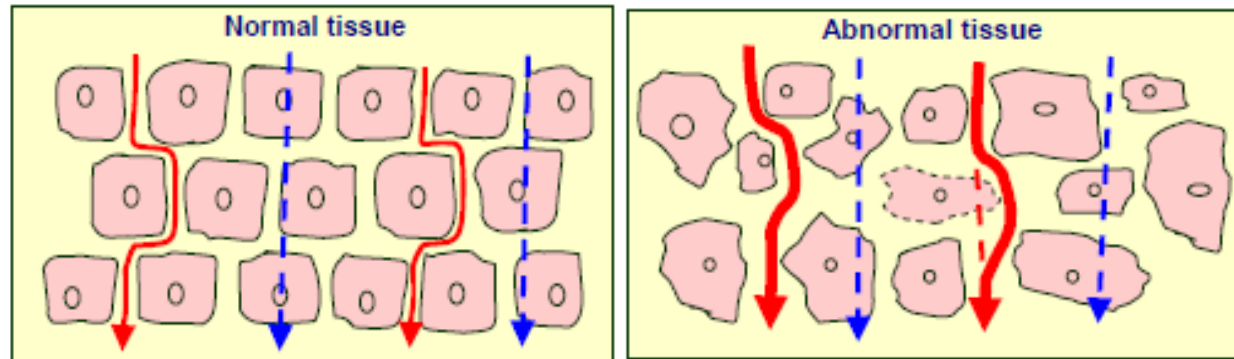
Measuring the amount of radiation exposure and potential tissue damage after each exposure alerts radiation professionals

Details of Underlying Technology for the Solution

Concept

Electrical Impedance of Skin

Semiconductor

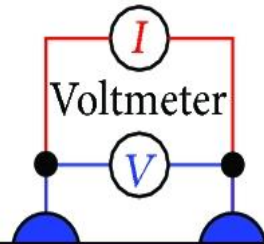


Application

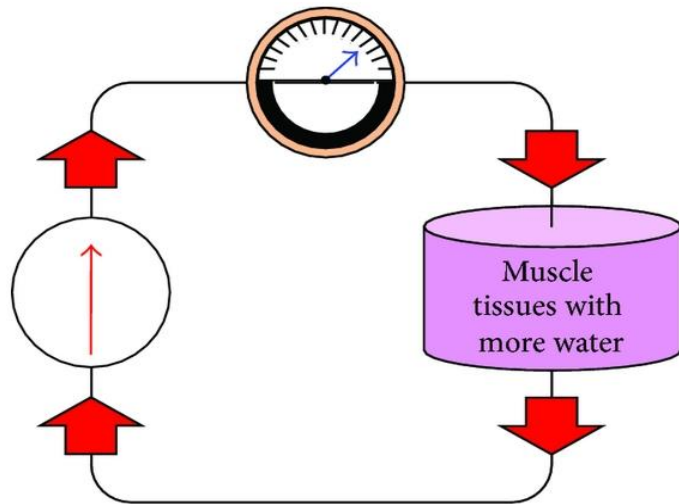
- Real time dosimeter : Ionization of inert gas at low pressure subjected to high voltage produces electrical discharge
- Tissue damage assessment : Electrical impedance of biological materials reflects the clinical status of the tissue

Underlying Concept

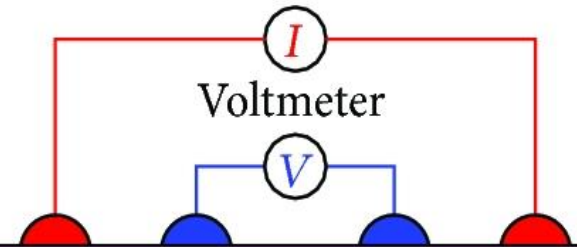
Current source



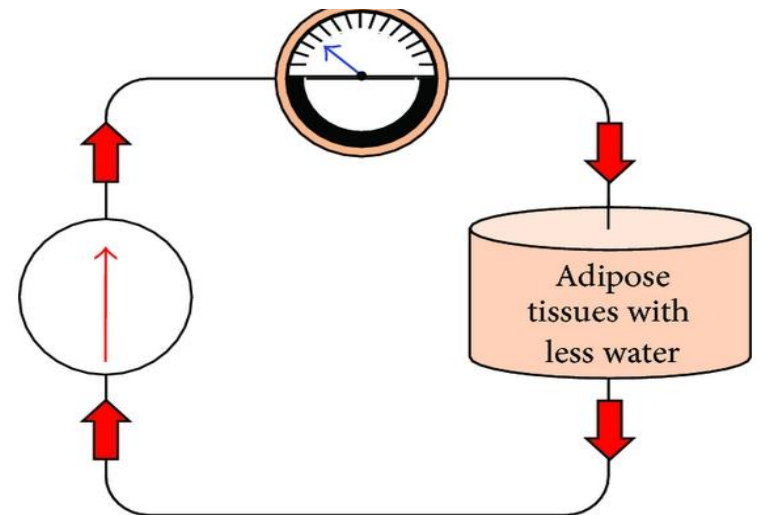
Biological tissue sample



Current source

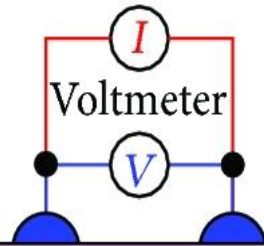


Biological tissue sample

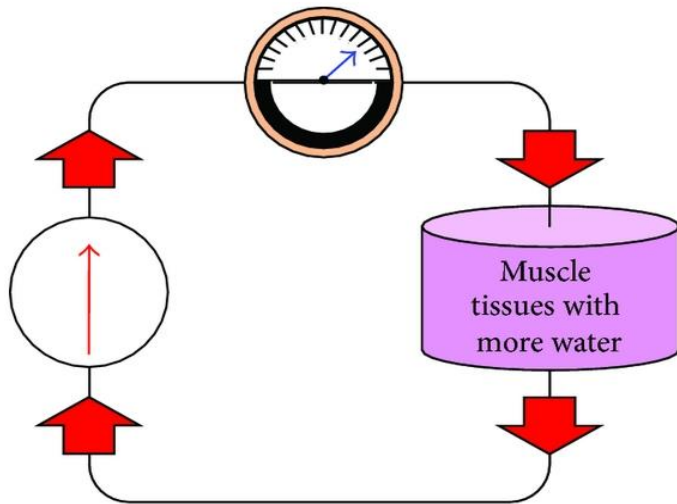


Underlying Concept

Current source



Biological tissue sample

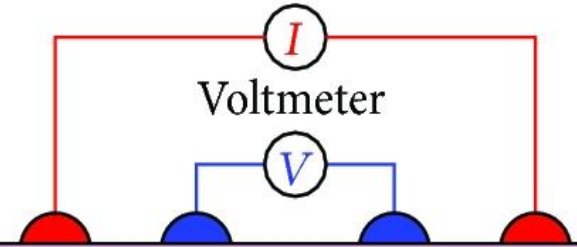


Current conduction through the muscle tissues

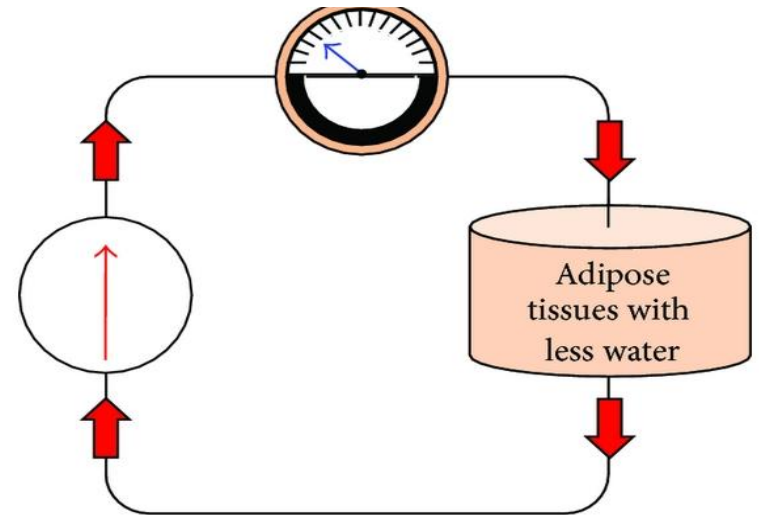
Impedance of the muscle tissue is very low

Electricity conduction is high

Current source



Biological tissue sample



Current conduction through the fat tissues

Impedance of the fat tissue is very high

Electricity conduction is less

Novelty, Feasibility and IP Strategy

Novelty

Single device to monitor radiation exposure and radiation induced potential tissue damage among radiation professionals

Technical Feasibility

- Influence of biological parameters on impedance is well researched
- Technique to measure voltage and current using electrodes placed on skin are mature and reliable, Hypoxia measurement SPO2 is reliable method

Potential Impact and Promise of Technology

- Real time measurement technique
- Portable standalone device
- Sensor technology with improved accuracy and reliability

Potential for patentability: Good possibility

Easily operable by skilled and immature operators

THANK YOU