Radiation Processing

Industry Direction and NIST Opportunities

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Services Offered By NIST

- Research, Data, and Publications
- Laboratories
  - Engineering
  - Material & Physical Measurement

- Technology Partnerships Office
- User Facilities
  - NIST Center for Neutron Research
  - Center for Nanoscale Science & Technology

- Standards & Measurements
  - Variety of areas including ionizing radiation applications

Ionizing Radiation Services Offered By NIST

- Radioactivity & Neutron Sources
- Dosimetry Services
  - Neutron, X-Ray, Gamma, Electron, High Dose Applications
  - Certified Dose Rate
  - Dosimeter Measurement & Calibrations
- Calibrations
  - Spectrophotometric Filters
  - Personal Protection Instrumentation

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Challenges – Current State

- Turn-around Times
- Cost
- User-friendly Website

- Who to contact?
  - To receive a status update on current order
  - Modification to an existing request
  - A specific technical question
  - To discuss a collaborative effort

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Path Forward

MEASURE. INNOVATE. LEAD.

Working with industry and science to advance innovation and improve quality of life.

- Think outside the research box
  - Understand industry needs
  - Provide technical support in a format for practical application

"Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit."

-William Pollard

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Future State – Services & Information

- Enhanced Services
  - Expedited irradiation & calibration services

- Visibility to Critical Information Through Web Portal
  - Access current order status
  - Communicate changes to an existing request
  - Current projects
  - NIST offering page – simple/user friendly
  - Ability to request special R&D projects – submit via web portal to initiate the process

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Future State – Resources

- Consulting
  - Biographies or similar web page
    - Know where to direct specific technical questions
    - Know that NIST might have the expert that can help
- Materials Expert / Support
  - Dosimeter and dosimeter packaging testing
  - Dosimeter formulation
- Industry Liaison
  - Customer-facing support role
- Project Manager
- Equipment
  - Dosimeter packaging equipment
  - Underutilized equipment lent by industry partners
  - Collaborative studies conducted off-site at industry partner facility on their equipment

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Practical Applications - Potential Customer Needs

Dosimetry

- Performance characterization of dosimetry systems

  - CTA – defining suitable routine practices and operational controls

  - Radiochromics – identifying and quantifying influece factors

  - Alanine – experimental and alternative applications

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Practical Applications - Potential Customer Needs

- Alanine pellet formulation for improved functionality
- Improve packaging
  - Alanine tapetab, temperature & humidity considerations
  - Functional traceability – barcoding
- Development of alanine film &/or pellet technology to improve utility in electron beam processing
- Advance polyethylene FTIR dosimetry (well suited for low energy e-beam) by establishing reference material formulations and enhancing practicality of measurement

Where do we go from here?

- Collaboration
  - ➢Forum for current NIST projects
    - Industry could provide feedback for practical use, existing info, peer review
  - ➢Academic student/internships to work on R&D projects
  - ➢Between and within academic & industry organizations

- Develop New Technology & Support Innovation

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Innovation

“Learning and innovation go hand in hand. The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.”

-William Pollard

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Questions

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