Materials Science & Technology Division FACT SHEET

Mission:
The MST division mission is to conduct basic and applied research and development on materials in order to improve the understanding of physical phenomena and to develop advanced materials and processes to enable energy-efficient, cost-competitive and environmentally acceptable materials technologies for a variety of important national priorities.

Who we are:

MST Division is centered in the Physical Sciences Directorate at Oak Ridge National Laboratory.

- Consists of 25 R&D Groups, three Programs, and three User Centers
- Research activities consist of a foundation of modeling and simulation, the three classical pillars of materials science: synthesis, structural characterization, and property evaluation, and a variety of applied materials science and technology topics ranging from materials to extreme environments to use-inspired applications
- Materials research is a major contributor to the development of energy technologies
- Leader in open-source materials research
- World class capabilities for materials synthesis, characterization, and property evaluation

Research:

Research activities consists of twenty-five groups can be grouped into six technical themes.

- Theory and modeling at multiple scales,
- designed synthesis of condensed matter physics systems, alloys, structural ceramics, and specialized crystals,
- structural characterization via electron, ion, photon and neutron sciences,
- comprehensive physical and mechanical property characterization,
- interaction with extreme environments (temperature, corrosive media, radiation), and
- applied materials physics (superconductivity, thermoelectrics, hydrogen storage, photovoltaics, catalysis, energy storage)

Division Director
Dr. Steven J. Zinkle joined the former Metals & Ceramics Division as a Wigner Fellow in 1985. Now a UT-Battelle Corporate Fellow and MST Division Director. He previously led the ORNL Nuclear Materials Science & Technology Group and managed the fusion materials and space reactor materials programs. His research has focused on transmission electron microscopy and physical properties of metals, ceramic insulations, and structural ceramics, and fundamental mechanisms of deformation and fracture. He has broad expertise in both metallic and ceramic materials for nuclear technology applications and is a leading international expert on radiation effects on materials.

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