

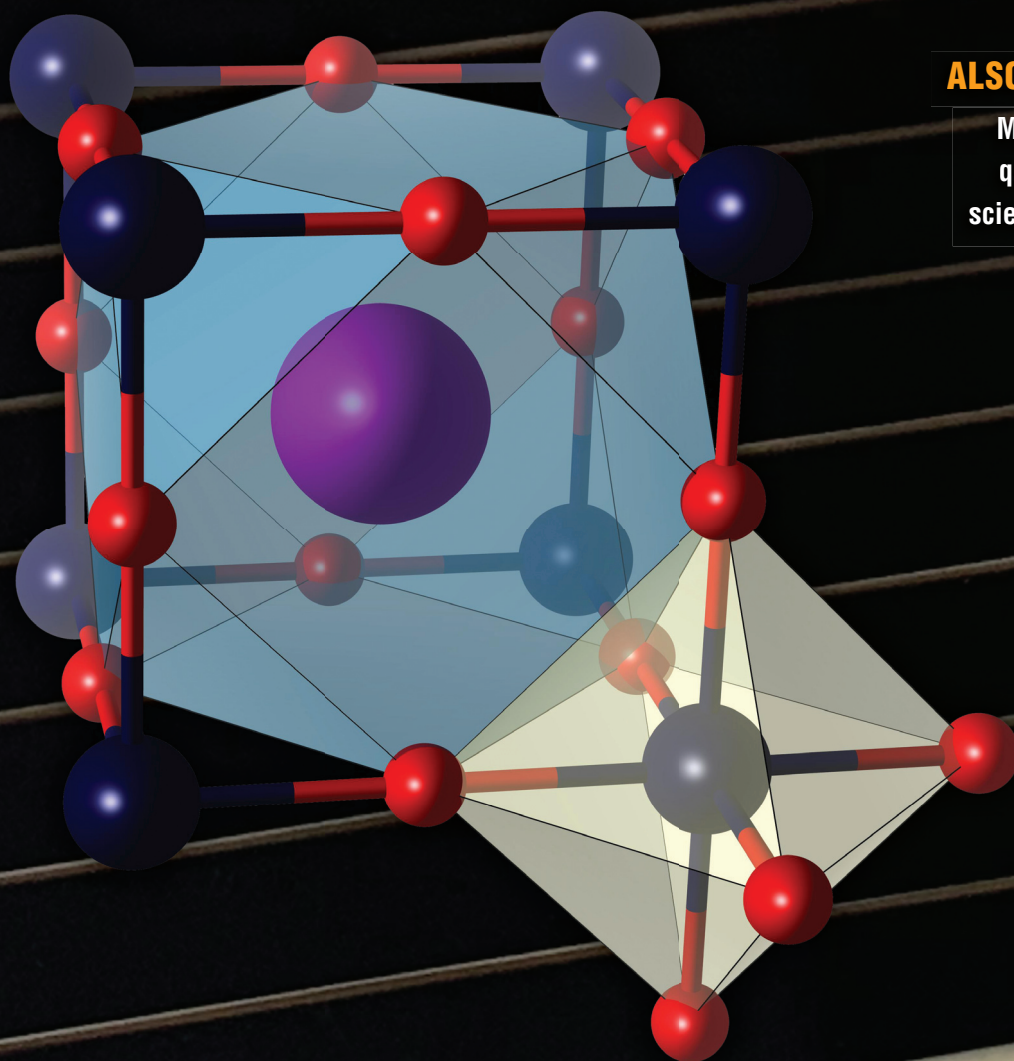
MRS Bulletin



MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

June 2020 Vol. 45 No. 6
 mrs.org/bulletin

Halide perovskite opto- and nanoelectronic materials and devices



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Materials science for quantum information science and technology

CUSTOMIZED PRODUCTION ION IMPLANTERS



- Beam energies from 10 keV up to several 10s of MeV
- Beam currents from 100 micro-amps up to several milliamps
- Ion species, including H, He, B, P, As and others
- Single wafer or batch processing of wafers up to and including 300 mm
- In-air or in-vacuum cassette-to-cassette wafer handling
- Electrostatic and/or mechanical wafer clamping



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23rd International Conference on Ion Implantation Technology

September 20–24, 2020 | San Diego, California | The US Grant Hotel

PREREGISTRATION OPENS MID-JULY

The **International Conference on Ion Implantation Technology 2020 (IIT 2020)** is the 23rd Conference in the biannual series focused on discussion of major challenges in current and emerging technologies related to implant/doping and annealing processes, device applications, equipment, metrology and modeling. The Conference offers an excellent opportunity for engineers and researchers in industry, research institutes and universities to present new results and to discuss ideas of new applications of ion implantation and annealing. The organizers welcome contributions from a wide range of topics, from fundamental research to industrial applications and equipment.

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SCIENTIFIC PROGRAM

The five-day Conference will feature oral and poster presentations covering the following topics:

Advanced Implant/Doping and Annealing Equipment

Annealing Technologies and Processes

- Rapid Thermal Processing, Laser Annealing, Flash Annealing, SPE, New Activation Annealing
- Junction, Silicide, Contact and Dielectric Formation
- Lattice Damage and Defects

Device Applications for Implant/Doping and Annealing Processes

- CMOS Devices, Memory Devices, Power Devices (SiC, GaN), RF-SOI, Image Sensors, IoT Devices, Photovoltaics, III-V Devices
- Integration with Other Fabrication Processes

Implant/Doping Technologies and Processes

- Ion Implantation, Plasma Doping, Gas and Solid Doping
- Junction Formation, MeV Implant, Materials Modification

Metrologies for Implant/Doping and Annealing Processes:

- Physical and Electrical Characterization of 2D and 3D Structures
- Advanced Process Control

Modeling and Simulation of Implant/Doping and Annealing Processes

CONFERENCE VENUE

San Diego, California, is often referred to as “America’s Finest City” and for good reason! Known for its beautiful weather, pristine beaches, friendly people and plethora of entertainment, San Diego is a favorite travel destination for visitors across the globe. This great city has a huge variety of attractions—from famous destinations like the San Diego Zoo, Sea World and Coronado Beach, to the 17 diverse museums of Balboa Park and the historic Gaslamp Quarter, San Diego has many dimensions to satisfy every traveler. A perfect blend of nature, city, suburbia and tourism make San Diego an ideal Conference and vacation destination.

For the most up-to-date information on IIT 2020, visit mrs.org/iit2020.

IIT 2020 is managed by

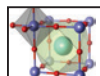


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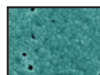


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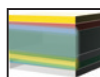
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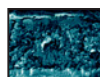
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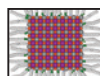
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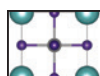
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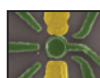


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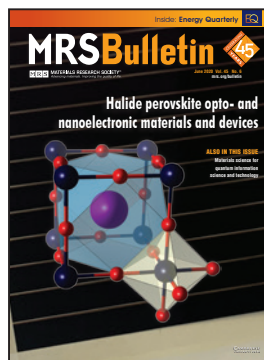
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ON THE COVER

Halide perovskite opto- and nanoelectronic materials and devices. The application of halide perovskites for photovoltaic solar cells and light-emitting diodes has rapidly expanded recently and is now being extended into nanoelectronics, including in thermoelectric, memory, and artificial synapse applications. Halide perovskites provide an excellent platform for optoelectronics with interesting optical, electrical, and magnetic properties. The articles in this issue overview halogen perovskites and devices for optoelectronic applications. The cover shows an AX_{12} cuboctahedron that shares its edges with the BX_6 octahedron, the classic perovskite structure, where A is a cation with a large ionic radius, B is a metal cation, and X is an anion. This structure is energetically stable and flexible enough to structurally accommodate a variety of elements. A perovskite solar cell mini-module is featured in the background. See the technical theme that begins on p. 427.



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The Materials Research Society (MRS), a not-for-profit scientific association founded in 1973 and headquartered in Warrendale, Pennsylvania, USA, promotes interdisciplinary materials research. Today, MRS is a growing, vibrant, member-driven organization of over 16,000 materials researchers spanning over 80 countries, from academia, industry, and government, and a recognized leader in the advancement of interdisciplinary materials research.

The Society's interdisciplinary approach differs from that of single-discipline professional societies because it promotes information exchange across many scientific and technical fields touching materials development. MRS conducts three major international annual meetings and also sponsors numerous single-topic scientific meetings. The Society recognizes professional and technical excellence and fosters technical interaction through University Chapters. In the international arena, MRS implements bilateral projects with partner organizations to benefit the worldwide materials community. The Materials Research Society Foundation helps the Society advance its mission by supporting various projects and initiatives.

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