



Posters by undergraduate and graduate students were honored for excellence at the 2020 Technical Division Student Poster Competition, held at the TMS 2020 Annual Meeting & Exhibition (TMS2020) in San Diego, California,

February 23–27. A number of TMS2020 symposia also recognized quality work through poster and presentation competitions. Congratulations to all of the award recipients who are recognized on the following pages.

Technical Division Student Poster Competition Winners

Extraction & Processing Division (EPD) Award

Graduate: “An X-ray Spectromicroscopy Study of the Calcium Mineralization in the JEB Tailings Management Facility at McClean Lake, Saskatchewan,” Arthur Situm, University of Saskatchewan

Functional Materials Division (FMD) Awards

Graduate: “Healable Transparent Supramolecular Polymer Nanocomposites-based Energy Storage Device for Wearables and Robotics,” Gurunathan Thangavel, Nanyang Technological University

Undergraduate: “Development of an All Solid-state Printed Carbon Electrode Utilizing Nickel Oxide/oxyhydroxide for Phosphate Detection,” Sookyoung Jeong, Purdue University

Light Metals Division (LMD) Awards

Graduate: “Effects of Mg and Si Additions to Novel Al-Ce base Alloys for Aerospace Applications,” Manny de Jesus-Lopez, University of Puerto Rico, Mayaguez

Undergraduate: “Effects of Mg+Si Additions on the Microstructure and Mechanical Properties of Al-Ce-Sr based Alloys,” Ramon Padin, University of Puerto Rico, Mayaguez

Materials Processing & Manufacturing Division (MPMD) Awards

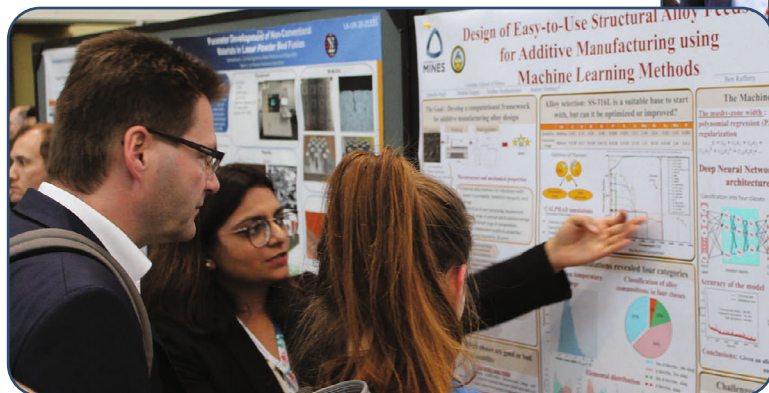
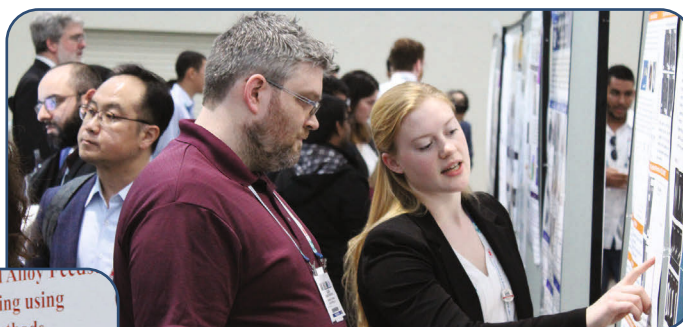
Graduate: “Modeling and Predicting Longitudinal Defect Mechanisms in Steel Continuous Casting,” Matthew Zappulla, Colorado School of Mines

Undergraduate: “Overcoming Oxidation of CMSX-4 to Determine the Thermophysical Properties in the Liquid State,” Zane Smith, Purdue University

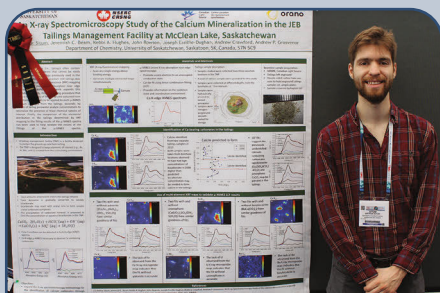
Structural Materials Division (SMD) Awards

Graduate: “Deformation Mechanisms in Imm-Ni₂(Cr,Mo,W)-containing Haynes® 244® Superalloy,” Thomas Mann, Purdue University

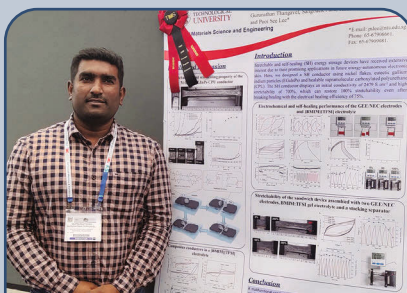
Undergraduate: “Computational Indicators of Ductility in Compositionally-complex B2 Alloys,” Emily Hwang, Harvey Mudd College



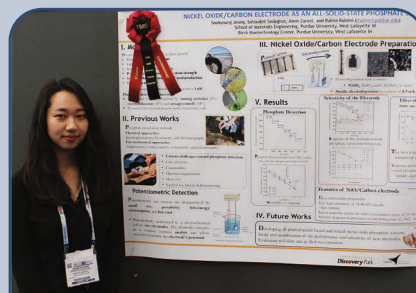
Technical Division Student Poster Competition Winners



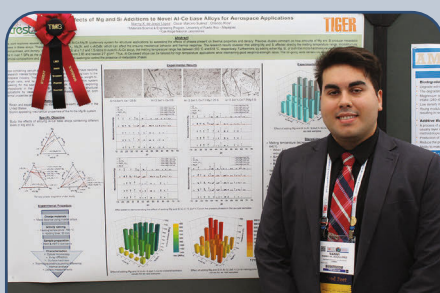
Arthur Situm,
University of Saskatchewan



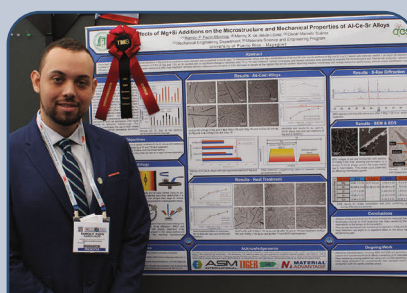
Gurunathan Thangavel,
Nanyang Technological University



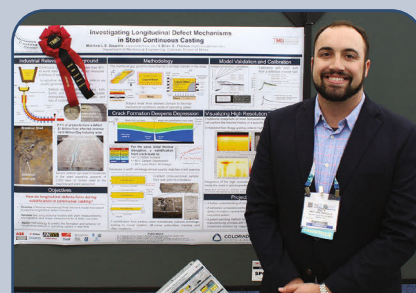
Sookyoung Jeong,
Purdue University



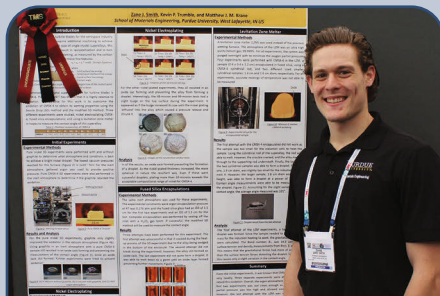
Manny de Jesus-Lopez,
University of Puerto Rico, Mayaguez



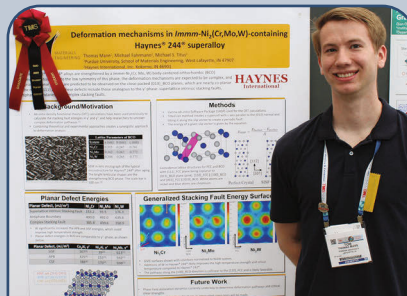
Ramon Padin,
University of Puerto Rico, Mayaguez



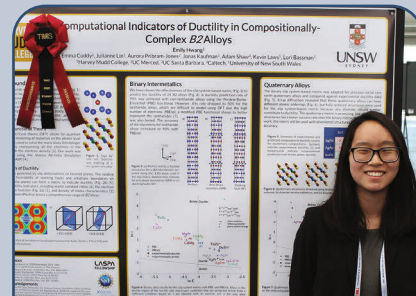
Matthew Zappulla,
Colorado School of Mines



Zane Smith,
Purdue University



Thomas Mann,
Purdue University



Emily Hwang,
Harvey Mudd College

Advanced Real Time Imaging Symposium Awards

First-Place Oral Presentation: “New Biomarkers of Prostate and Breast Cancer Metastasis to Bone,” *Kalpana Katti*, Sumanta Kar, Haneesh Jasuja, M.D. Shahjahan Molla, and Dinesh Katti, North Dakota State University

Second-Place Oral Presentation: “X-ray Phase Contrast Imaging of Dynamic Compression of Additively Manufactured High-solids-loaded Polymer Composites,” Karla Wagner, Andrew Boddorff, Greg Kennedy, Min Zhou, and *Naresh Thadhani*, Georgia Institute of Technology

Third-Place Oral Presentation (Tie): “In-situ Observation of Hyperbranched Dendrite Growth,” *Tiberiu Stan*, Kate Elder, and Peter Voorhees, Northwestern University; Xianghui Xiao, Brookhaven National Laboratory

“Micro-scale Imaging of Cancerous Tissues using High Frequency Ultrasound,” Leila Ladani and *Koushik Paul*, Arizona State University

First-Place Oral Presentation, Student: “HT-LSCM as a Tool for Indirect Determination of Precipitates by Real Time Grain Growth Observations,” *Nora Fuchs*, Christian Bernhard, and Susanne Michelic, University of Leoben; Rian Dippenaar, University of Wollongong

Second-Place Oral Presentation, Student (Tie):

“Inkjet Printed Electrochemical Aptasensor for Detection of Hg^{2+} in Organic Solvents,” *Lixby Diaz-Amaya*, Li-Kai Lin, Renee DiNino, and Lia Stanciu, Purdue University; Carlos Ostos, Universidad de Antioquia

“ $\text{Sc}_3\text{N@C}_{80}$ and La@C_{82} doped Graphene Photodetectors,” *Kishan Jayanand*, Ravindra Mehta, Srishti Chugh, and Anupama Kaul, University of North Texas

First-Place Manuscript/Conference Proceedings:

“Development of HT-LSCM Techniques for the In-situ Study of the Peritectic Phase Transition,” Rian Dippenaar, Dominic Phelan, Mark Reid, Suk-Chun Moon, and Dasith Liyanage, University of Wollongong; Stefan Griesser, Inteco

Alloys and Compounds for Thermoelectric and Solar Cell Applications VIII Symposium Best Posters

First-Place Poster: “Realizing the Microstructure in GeTe-based Thermoelectric Materials and Phase Transition Behavior,” *Yi Fen Tsai* and Hsin-Jay Wu, National Chiao-Tung University; Pai-Chun Wei, King Abdullah University of Science and Technology

Second-Place Poster: “Thermoelectric Properties of Multiply Doped $\text{Mg}_3(\text{Sb}, \text{Bi})_2$,” *Yasuo Shibata*, Yuji Ohishi, and Hiroaki Muta, Osaka University

Third-Place Poster: “Assessment of Co-P Diffusion Barrier for Bismuth Telluride-based Thermoelectric Materials,” *Zhen-Wei Sun*, Chun-Hsien Wang, and Albert T. Wu, National Central University

Second-Place Manuscript/Conference

Proceedings: “Sub-rapid Solidification Study of Silicon Steel by Using Dip Test Technique,” Hairui Qian and Wanlin Wang, Central South University

Third-Place Manuscript/Conference Proceedings:

“Real-Time Imaging of the Melting and Crystallization of Synthetic Ferronickel Slags with Varying B_2O_3 Content,” Shifan Dai, Wanlin Wang, Lejun Zhou, Tongsheng Zhang, and Jie Yu, Central South University



The winners and judges for the Alloys and Compounds for Thermoelectric and Solar Cell Applications Symposium best poster competition are, from left to right: Albert Wu (judge), H. J. Wu (judge), Yasuo Shibata, Yi-Fen Tsai, Zhen-Wei Sun, and George Nolas (judge).

Biodegradable Materials for Medical Applications II Best Posters

First-Place Poster: “Novel Method for Increasing Mechanical Properties of Biodegradable Zinc,” *Anna Jarzebska*, Magdalena Bieda-Niemiec, Łukasz Maj, Martyna Strąg, Robert Chulist, Jan Guśpiel, and Krzysztof Sztwiertnia, Institute of Metallurgy and Materials Science, Polish Academy of Sciences, Krako; Daniel Wojtas, AGH University of Science and Technology Faculty of Physics and Applied Computer Science; and Waclaw Pachla, Institute of High Pressure Physics, Polish Academy of Sciences, Warszawa

First-Place Poster, Student: “Research on Zn-Ag-Mg Alloy as a Potential Biodegradable Implant Material,” *Maria Watroba*, Wiktor Bednarczyk, Jakub Kawałko, Krzysztof Mech, and Piotr Bała, AGH University of Science and Technology; and Gabriela Boelter and Manuel Banzhaf, University of Birmingham

Second-Place Poster, Student: “Long Term Inflammatory Response to Zinc Materials in Murine Arteries,” *Alexander Oliver*, Roger Guillory, Timothy Kolesar, Lea Morath, Katie Flom, Ehsan Mostaed, Jaroslaw Drelich, and Jeremy Goldman, Michigan Technological University

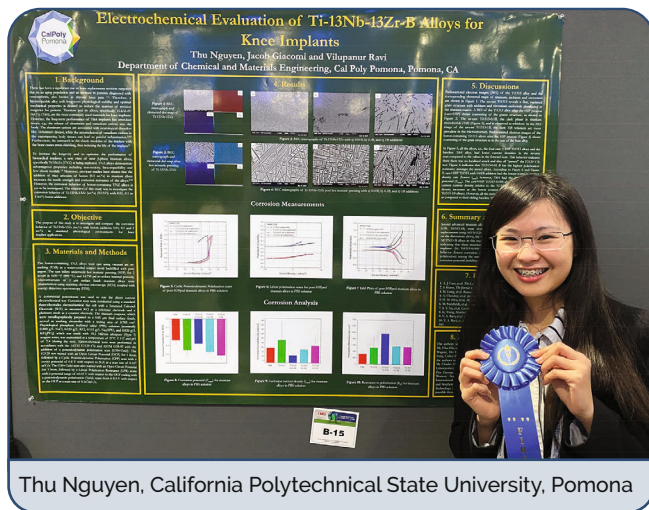
Third-Place Poster, Student: “Discovery of Alloying Elements and Processing Parameters that Impart Improved Biocompatibility of Zinc-based Medical Implants,” *Lea Morath*, Alexander Oliver, Katie Flom, Roger Guillory, Jeremy Goldman, Eshan Mostaed, and Jaroslaw Drelich, Michigan Technological University

Biological Materials Science Symposium Best Posters

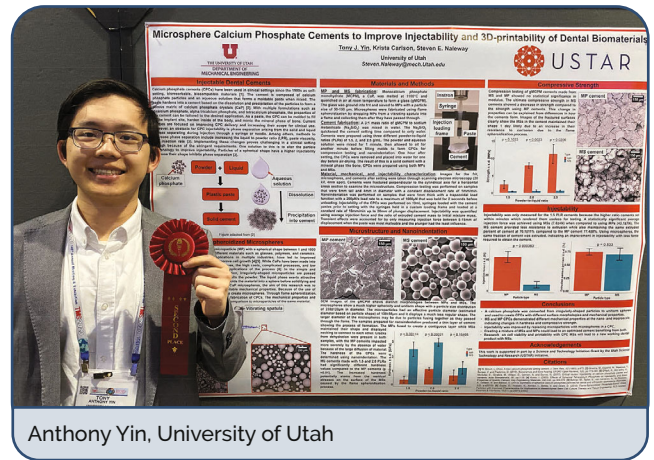
First-Place Poster: “Electrochemical Evaluation of Ti-13Nb-13Zr-B Alloys for Knee Implants,” *Thu Nguyen*, Jacob Giacomini, and Vilupanur Ravi, California Polytechnic State University, Pomona

Second-Place Poster: “Microsphere Calcium Phosphate Cements to Improve Injectability and 3D-printability of Dental Biomaterials,” *Anthony Yin*, Krista Carlson, and Steven Naleway, University of Utah

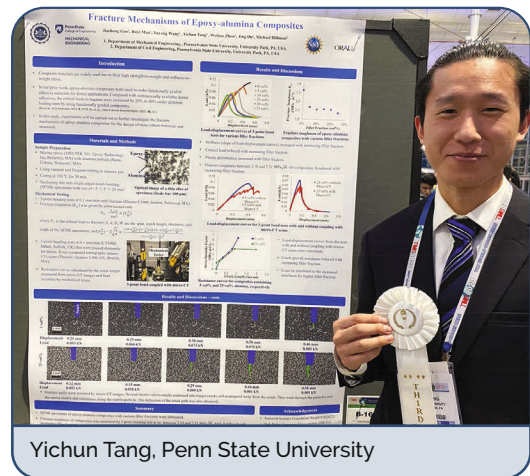
Third-Place Poster: “Fracture Mechanisms of Epoxy-alumina Composites,” Jiacheng Gao, Ruyi Man, Yuyang Wang, *Yichun Tang*, Kangning Su, Michael Hillman, and Jing Du, Penn State University



Thu Nguyen, California Polytechnic State University, Pomona



Anthony Yin, University of Utah



Yichun Tang, Penn State University

Fatigue in Materials: Fundamentals, Multiscale Characterizations and Computational Modeling Symposium Best Posters

First-Place Poster: “Deformation Mechanism of Nickel-titanium-hafnium Alloys Subjected to Rolling Contact Fatigue Experiments,” Behnam Aminahmadi, *Sean Mills*, and Aaron Stebner, Colorado School of Mines; and Christopher Dellacorte and Ronald Noebe, NASA Glenn Research Center

Second-Place Poster: “Elucidating the Effect of High-Altitude Environments on the Fatigue Life of 7075-T651 Aluminum Alloy Determined by using AFGROW Modeling,” *Luke Brown*, University of Virginia

Third-Place Poster: “Effect of Machining and Surface Microstructure in Fatigue Life for Aerospace Titanium Alloys,” *Daniel Suárez Fernández*, Bradley Wynne, and Martin Jackson, The University of Sheffield; Pete Crawforth, Advanced Manufacturing Research Centre; and Katharine Fox, Rolls-Royce plc

Phase Stability, Phase Transformations, and Reactive Phase Formation in Electronic Materials XIX

First-Place Poster: “From Electric Current-induced Lattice Strain to Electromigration Occurrence: An In-situ Study,” *Kuan-Hsueh Lin*, Yu-chen Liu, and Shih-kang Lin, National Cheng Kung University; and Ching-Shun Ku and Shang-Jui Chiu, National Synchrotron Radiation Research Center

Second-Place Poster: “Mechanisms of Abnormal Grain Growth of Al Bonding Wires under Annealing Process,” *Jen-Hsuan Tsai* and Fan-Yi Ouyang, National Tsing Hua University

Third-Place Poster: “Interfacial Reactions of Ag-Au-xPd Alloys Wire Bonding with Al,” *Chiao-Yi Yang*, Kuo-Jung Chen, and Yee-Wen Yen, National Taiwan University of Science and Technology; and Wallace Chuang and Eckart Schellkes, Robert Bosch Taiwan Co. Ltd. Automotive Electronics Division

