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Foreword: Special Section on Electrical Contacts

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Foreword: Special Section on Electrical Contacts

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Abstract:

Welcome to the Special Topics Section dedicated to the 2016 Holm Conference on Electrical Contacts. This Special Section contains six high-quality papers that comprehensively describe the state of the art and potential future directions for topics of great interest to our readers. The Editor-in-Chief (EIC), in consultation with the other EICs, Associate Editors (AEs), and domain experts, selects the topics for the Special Sections, and a Guest Editor or AE (GE/AE), who is a leading expert in the technical area, and

then directs the solicitation and peer review of the papers. In cases where the GE/AE is also an author, the EIC is responsible for the peer review to avoid any real or perceived conflicts of interest.

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This Special Topics Section focuses on new and emerging technologies in the electrical contacts area including advanced modeling, promising new contact materials, microcontacts and microelectromechanical systems (MEMS) switches, and improved direct-current (dc) circuit breaker topologies needed for electric vehicles and high-voltage solar applications.

The paper “Investigation on the Thermal Failure of Micro-USB Connectors in Mobile Phones” studies the frequently observed failure mechanism of burning around the micro-USB connectors that are used in products such as smartphones, tablets, and e-book readers.

The paper “Experimental Study on Contact Behavior of Tilted Contact in Air Circuit Breaker” investigates the contact behavior of tilted contacts found in air circuit breakers using a newly designed test apparatus.

The paper “Arcless Commutation of a Hybrid DC Breaker by Contact Voltage of Molten Metal Bridge” evaluates using the molten metal bridge phenomena to provide arcless commutation and interruption of dc current.

The paper “Electrical Lifespan Prediction of HVDC Relay Based on the Accumulated Arc Erosion Mass” predicts high-voltage dc relay lifetimes based on arc erosion mass derived using measured arc waveforms.

The paper “Simulation Methodology for Prediction of the Wear on Silver-Coated Electrical Contacts With a Sphere/Flat Configuration” uses Archard’s wear equation, surface roughness, and contact geometry to predict the wear through of silver-coated electrical contacts.

The paper “Influences of Contact Opening Speeds up to 200 mm/s and External Magnetic Field Application on Break Arc Duration Characteristics of AgSnO₂ Contacts in dc 14 V Load Conditions up to Around 10 A” evaluates various break operations and their effects on silver-tin oxide electrical contacts under dc and inductive circuits loads.

We acknowledge all the authors who contributed papers and all the reviewers for their thorough reviews. We hope that this issue will serve as a valuable resource for the research community, as well as a catalyst for increased research and exploration in the exciting and far-reaching fields of electrical contacts.