

81st Conference on Glass Problems

Edited by
S.K. Sundaram

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Foreword

The 81st Conference on Glass Problems (GPC) was organized by the Kazuo Inamori School of Engineering, The New York State College of Ceramics, Alfred University, Alfred, NY 14802 and The Glass Manufacturing Industry Council (GMIC), Westerville, OH 43082. The Program Director was S. K. Sundaram, Inamori Professor of Materials Science and Engineering, Kazuo Inamori School of Engineering, The New York State College of Ceramics, Alfred University, Alfred, NY 14802. The Conference Director was Bob Lipetz, Executive Director, Glass Manufacturing Industry Council (GMIC), Westerville, OH 43082. The GPC Advisory Board (AB) included the Program Director, the Conference Director, and several industry representatives. The Board assembled the technical program. Donna Banks of the GMIC coordinated the events and provided support. Due to world-wide COVID-19 pandemic, the conference was a virtual event. It started with a full-day plenary session followed by technical sessions. The themes and chairs of four technical sessions were as follows:

Construction/Repair

Larry McCloskey, Anchor Acquisition, LLC, Lancaster, OH

Melting

Uyi Iyoha, Linde Inc., Peachtree City, GA

Quality Control & Sensors

Kenneth Bratton, Bucher Emhart Glass, Windsor, CT

Environmental and Sustainability

Adam Polycn, Vitro Architectural Glass, Cheswick, PA

In addition, one session entitled, "In-Furnace Thermal Imaging for Survey and Operations Optimization," was held at the end Monday October 26th sponsored by Land Ametek. Two sessions entitled, "New Technology Spotlight Webminar: Synchronized Oxy-Fuel Boost Burners for Zero-Port Performance Optimization," sponsored by Air Products and "Current and Future Melting & Conditioning Solutions for All Glassmakers," sponsored by fives were held at the end of Tuesday 27th.

Preface

This volume is a collection of papers presented at the 81st year of the Glass Problems Conference (GPC) in 2020. The GPC continues the tradition of publishing the papers that goes back to 1934. The manuscripts included in this volume are reproduced as furnished by the presenting authors but were reviewed prior to the presentation and submission by the respective session chairs. These chairs are also the members of the GPC Advisory Board.

As the Program Director of the GPC, I am thankful to all the presenters at the 80th GPC. This year's meeting was record breaking in many senses. We had a total of 570 registered attendees including 40 students from across the country. I appreciate all the support from the members of Advisory Board. Their volunteering sprit, generosity, professionalism, and commitment through an unprecedented world-wide pandemic were critical to the high-quality technical program at this Conference. I also appreciate continuing support and strong leadership from the Conference Director, Mr. Bob Lipetz, Executive Director of GMIC and excellent support from Ms. Donna Banks of GMIC in organizing the GPC. I look forward to continuing our work with the entire team in the future.

Please note that The American Ceramic Society and myself did minor editing and formatting of these papers. Neither Alfred University nor GMIC is responsible for the statements and opinions expressed in this volume.

S. K. Sundaram
Alfred, NY
November 2020

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Justin Wang - *Guardian Industries, Auburn Hills, MI*

I am indebted to Donna Banks, GMIC for her patience, support, and attention to detail in making this conference a big success and this Proceedings possible.

Finally, the whole team has worked tirelessly against all odds of the ongoing world-wide pandemic making this a successful conference. The determination and enthusiasm are enduring and inspiring.

PLENARY