

## Preface

“Scientific technology” has progressively displaced “empirical technology” as the primary driver and basis for increasing economic development over the last four centuries. The integration of technologies of power developed during the 17<sup>th</sup> – 19<sup>th</sup> Centuries with technologies of thinking developed in the 20<sup>th</sup> Century has provided further acceleration of the scale and efficiency of formal inventive and innovation processes as key sources of wealth creation by the innovation process.

In the 21<sup>st</sup> Century, complex technology systems based on linking various combinations of these technologies provide the frontier for further increase in the rate of innovation and economic development in products, processes and services. Material Science played a fundamental role in this innovative journey.

In this special first issue, we have emphasized some key innovations specific to Materials Science, that has exerted such a profound impact over the past 75 years. Clearly, however, we are only able to capture but a miniscule snapshot of the gamut of such innovative activity.

The volume also presents key aspects of the fundamentals of the entire invention/innovation process beginning with an article which describes the linkages between Mathematics and Invention in the past and current centuries. Innovations in Energy Conversion Materials, Electronics, Jet Engines, Ophthalmologic Materials, Glass, Wood, Aluminum and Steel follow.

The age group of the authors ranged from 30 years old to 90 years young with very diverse national backgrounds. We believed that the perception of innovation from such a diverse group would be the best for recognizing key innovations. In subsequent issues, we will aim to be more representative of countries which are clearly missing, but where innovation has flourished.

Perhaps this is the first such collection, and we do hope that the reader enjoys the collection as much as we have enjoyed putting it together. We are very grateful to all the authors for their excellent invited articles. We thank Dr. Wohlbier for the opportunity for editing this issue for Trans Tech.

J. A. Sekhar, Cincinnati, Ohio, USA

J. P. Dismukes, Toledo, Ohio, USA

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