

Preface

This volume of *Advanced Structured Materials* contains selected papers presented at the 1st International Conference on Materials Design and Applications 2016 (MDA 2016), held in Porto, Portugal, during June 30–July 1, 2016. The goal of the conference was to provide a unique opportunity to exchange information, present the latest results, as well as discuss issues relevant to materials design and applications. The focus is on fundamental research and application areas in the field of the design and application of engineering materials, predominantly within the context of mechanical engineering applications such as automobile, railway, marine, aerospace, biomedical, pressure vessel technology, and turbine technology. This includes a wide range of materials engineering and technology, including metals, e.g., lightweight metallic materials, polymers, composites, and ceramics. Advanced applications include manufacturing in the new materials, testing methods, and multi-scale experimental and computational aspects (e.g., microscale and nanoscale techniques). Approximately, 150 papers were presented by researchers from nearly 30 countries.

In order to disseminate the work presented in MDA 2016, selected papers were prepared which resulted in the present volume dedicated to ‘Materials Design and Applications.’ A wide range of topics are covered resulting in 31 excellent papers dealing with metals, ceramics, composites, design, power generation, additive manufacturing, machining, and joining. This book is state of the art of materials design and applications and also serves as a reference volume for researchers and graduate students working with advanced materials.

The organizer and editor wish to thank all the authors for their participation and cooperation, which made this volume possible. Finally, I would like to thank the team of Springer-Verlag, especially Dr. Christoph Baumann, for the excellent cooperation during the preparation of this volume.

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