

## **Preface**

Materials processing by electron and laser beams has been investigated and applied in various industries for several decades, but in recent years there has been an increase in research and development activities. This is reflected in an increasing number of industrial applications using these methods because of their technical and economic benefits. This enables manufacturers and end-users to be more competitive, and for these reasons, electron and laser beam materials processing are likely to grow continuously.

The papers in this special issue cover a number of important aspects in this field. Most of the applications of high-power electron beam materials processing are related to welding. However, the variety of welding modes and application fields are constantly expanding. Laser beams, on the other hand, are used for a wider range of processes. The topics in this issue include welding, coating, material removal, and micro-engraving. An overview of the mathematical modelling of laser materials processing provides a clear picture of the current status in the field and recommendations for future developments. In both electron beam and laser beam materials processing, many processing parameters need to be controlled. The use of statistical methods for optimising process variables therefore becomes important. This topic is also included in this issue.

I would like to thank all the authors for their invaluable contributions to this special issue.

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