Fraunhofer DDMC 2020 special issue of the progress in additive manufacturing journal

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The “Fraunhofer DDMC 2020 Special Issue” of the progress in additive manufacturing (PIAM) journal contains the ten best papers of the “Fraunhofer Direct Digital Manufacturing Conference DDMC 2020” which took place on 18 and 19 March 2020 in Berlin, Germany.

Fraunhofer DDMC is a biennial conference on additive manufacturing (AM) that has celebrated its fifth event since being established in 2012. It brings together around 150 experts from academia and industry around the world. The purpose of the Fraunhofer DDMC is to provide a platform for intellectual exchange between researchers, enterprises, and users of AM technologies to gather the latest information about trends, progress and further the potential of these emerging technologies for industrial application.

In 2020, the conference has attracted 57 oral and 12 poster presentations, organized into 19 different sessions. In addition, four distinguished representatives from the industry were invited as keynote speakers with their very personal view on the future of additive manufacturing: Dr. Hans J. Langer (CEO and Chairman, EOS Group), Greg Fallon (VP Business Strategy, Autodesk), Tim Weber (Global Head of 3D Metals, HP), and Janne Kytanen (3D Printing Artist and Entrepreneur, What the Future Venture Capital).

The ten best papers of Fraunhofer DDMC 2020 were selected based on a double-blind review process and respective ranking of all DDMC 2020 submissions. They are not part of the DDMC 2020 conference proceedings, but

exclusively published in this special issue of the progress in additive manufacturing journal, having run through a second double-blind review cycle. The selected papers, authored by researchers from six different countries, focus on trending topics in research and application of additive manufacturing, covering a wide range of different AM processes including powder bed fusion and material extrusion technologies. Presenters also delivered talks about AM materials from polymers to metals such as 316L stainless steel and TiAl6V4 titanium alloy, new steel types including 42CrMo4 heat-treatable steel and 30CrNiMo8 case hardening steel or other special materials like NdFeB permanent magnets and NiTi shape-memory alloy.

The Fraunhofer DDMC conference is organized by the Fraunhofer Additive Manufacturing Alliance, integrating twenty Fraunhofer institutes across Germany. The alliance consolidates Fraunhofer’s AM research activity and covers the entire process chain of additive manufacturing including engineering (application development), materials (polymers, metals, and ceramics), technologies (powder bed based, extrusion based, and print based), quality (reproducibility, reliability, and quality management) as well as software and simulation. The Fraunhofer AM Alliance has partnered with the PIAM journal to publish the ten best papers submitted for Fraunhofer DDMC 2020. We thank the Editors-in-Chief, Dr. Martin Schaefer, Dr. Cynthia Wirth, and Dr. Eujin Pei for supporting this Fraunhofer DDMC 2020 special issue. Additional thanks go to Silvia Schilgerius, Jutta Daum, and Aiswarya Satheesan for their time and dedication to make this issue happen.

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We hope you enjoy reading this PIAM special issue and we invite you to attend the sixth Fraunhofer DDMC conference edition in 2022. We are looking forward to receiving contributions and welcoming you as participants of this exciting event!

Prof. Frank Brueckner,
(Lead Guest Editor).

Prof. Sebastian Bremen,
(Guest Editor).

Dr. Bernhard Mueller,
(DDMC Conference Chairman).

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