

Foreword: “Eurosurgicalloys 2022”



This topical edition of Metallurgical and Materials Transactions A contains 48 papers that were presented during the 4th European Conference on Superalloys (“Eurosurgicalloys 2022”) which took place in Bamberg in Germany, during the period 3rd–7th September 2022. This conference, chaired by Prof. Dr. Mathias Göken (Friedrich-Alexander-University Erlangen-Nürnberg), was co-organized by the Ruhr-University Bochum (Pr. Dr. G. Eggeler, Dr. T. Hammerschmidt), the Friedrich-Alexander-University (Pr. Dr. Eng. C. Körner and Dr. S. Neumeier) and the University of Bayreuth (Pr. Dr. U. Glatzel), with the technical support of the German Materials Society DGM. After the 2020–2021 pandemic period, this was the first conference from this field held “in-person”, attended by more than 300 colleagues (~ 220 on-site) from Academia, National labs and Industry.

Ni- and Co-based superalloys remain state-of-the art materials for structural applications at high-temperature in the aerospace, power generation and petro-chemical sectors in addition to many emerging areas such as automotive (e.g. turbochargers), satellites or glass-processing industry. Classical topics such as alloy design, processing, mechanical and environmental behaviors, constitutive modeling and additive manufacturing were covered during this conference. A special focus was also paid to nanomechanical/in-situ characterization, repair/refurbishment, sustainability and life-cycle management.

Among all oral/poster presentations, 61 articles were submitted to the journal and peer-reviewed fully and consistent with the journal’s well-established procedures. The guest Key Readers team built for this special edition is gratefully acknowledged for the tremendous amount of work done in a very short period of time (from July 2022 up to January 2023). The Organizing Committee also thanks all authors who have worked hard to prepare original manuscripts; this special edition of the journal likely will have a great impact among the Superalloys community, consistent with citations of papers previously published from “Eurosurgicalloys 2018”.

Finally, the Organizing Committee chose to honor Professor Cathie Rae as the dedicatee for Eurosurgicalloys 2022. Catherine M.F. Rae, Professor of Superalloys at the University of Cambridge UK, is worldwide recognized for all her impressive contributions to a better understanding of deformation mechanisms, long-term stability, solution heat treatments, processing-mechanical properties relationships and environmental resistance of Ni-/Co-based superalloys, among other topics. A special session was organized during the conference to honor all her pioneering and cutting-edge contributions to the scientific field. Her career was retraced during the conference banquet by Dr. Mark Hardy (Rolls-Royce Plc) and Dr. Howard Stone (University of Cambridge), showing how Cathie’s contributions have been useful to industrial fields but also what an outstanding mentor and colleague she has been for more than three decades.

Guest Key Readers of this Topical Edition:

Dr. Thomas Hammerschmidt, Ruhr-University Bochum, Germany

Dr. Paraskevas Kontis, Norwegian University of Science and Technology (NTNU), Norway

Pr. Sophie Primig, UNSW Sydney, Australia

Dr. Caspar Schwalbe, MTU Aero Engines AG, Germany

Dr. Ing. Christopher Zenk, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

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