

## Foreword

The DYMAT International Conference is a “compelling scientific event” for engineers and scientists working in the dynamic behaviour of materials field. Since 1983, DYMAT has been organizing a five days single sessions of oral presentations and poster exhibitions with proceedings available at the beginning of the conferences. Well-known for its scientific interest, the triennially DYMAT International Conferences are the platform to present the most recent scientific achievements on dynamic behaviour of materials relevant to crashworthiness in all types of transports; terminal ballistics related to defence and shielding of satellites, of turbine; blast effects due to industrial explosions, terrorist attacks; material processing such as high speed machining.

The 10<sup>th</sup> DYMAT International Conference, programmed between September 2<sup>nd</sup> and 7<sup>th</sup> 2012, was organized by the Fraunhofer Institute for High Speed Dynamics, Ernst Mach Institute, in Freiburg, Germany. Specific emphasis was set to five key topics: Experimental Techniques, Microstructural Effects, Biomechanics, Modeling and Numerical Simulation, and Industrial Applications. With authors from 26 countries, the DYMAT International Conference proofed once more its international character. For the first time the Conference offered two types of publications. The contributions in this current issue of “European Physical Journal Web of Conferences” (EPJ-WoC) were submitted as proceeding papers. Alternatively, authors could submit manuscripts to a peer review process and publish in an issue of the “European Physical Journal Special Topics” (EPJ-ST), entitled “Characterization, Modeling and Simulation of Materials at High Strain Rates”.

The success of this conference also underlined the interest of the scientific community regarding the DYMAT Association, which celebrated its 29<sup>th</sup> anniversary in 2012, and which always highly promoted work in the field of the dynamic behaviour of materials. With this aim, the Association has organized several “Technical Meetings” (TM) on special topics in the field of dynamic behaviour of materials. Since 2009, two TM have been organized with the 19<sup>th</sup> TM on polymers and composites held in December 2010, Strasbourg, France, and with the 20<sup>th</sup> TM on nanomaterials, metallic glasses and architecturally designed materials, held in September 2011 at the “Assemblée Nationale” in Paris, France. In addition to the Technical Meetings, the Governing Board has initiated in 2010 a bi-annual seminar series for PhD students named “DYMAT Student Camp” (DSC). The first one was held in October 2010, in Guétary, France, and the second one in June 2012, in Tampere, Finland. These seminars have provided a real momentum for exchanges between young researchers. And the last but not least, the Association financially supported the organization of seminars and workshops related to the dynamic behaviour of materials, encouraged a DYMAT sub-group “Light-Weight Armour Group” (LWAG), provided to DYMAT members through the website’s pdf files of all published papers since 1983 in the proceedings of the International Conferences and TM.

DYMAT 2012 will have the honour of being the second DYMAT International Conference to give the John S. Rinehart’s Award. This distinction, established in 1990 to recognize outstanding effort and creative work in the science and technology of dynamic processes in materials, has been awarded every five years on the occasion of several EXPLOMET International Conferences. Since 2009, DYMAT is the Custodian of the Award. A special jury, composed of the members of the DYMAT International Advisory Committee and members of the DYMAT Governing Board, voted and selected one winner. Our sincere congratulations go to Professor Alain Molinari from the University of Metz, who is the recipient of the John S. Rinehart Award 2012.

I cannot conclude this foreword without saying how much we are grateful to Professor Stefan Hiermaier, chairman of the Conference and editor of the EPJ-ST issue, who has completed a remarkable work in the organization and the success of this meeting. My thanks also go to his colleagues, who greatly contributed to this success.

Finally, I would also like to thank the members of the International Advisory Committee and the Governing Board for their implication in ensuring the high scientific level of the conference.

**Bourges, May 4<sup>th</sup> 2012**  
**Hervé Couque**  
**President of DYMAT Association**