

Proceedings of the 8th International Conference  
on Mechanochemistry and Mechanical Alloying

Kraków, Poland, June 22–26, 2014

*Editors of the Proceedings:*

Krystyna Wieczorek-Ciurowa and Dariusz Oleszak

WARSAW

---

POLISH ACADEMY OF SCIENCES  
INSTITUTE OF PHYSICS

**The Conference was organized by:**

Cracow University of Technology, Faculty of Chemical Engineering and Technology  
Warsaw University of Technology, Faculty of Materials Science and Engineering  
**under the auspices**  
of International Mechanochemical Association

**International Advisory Committee:**

M. Atzmon (USA)	E. Avvakumov (Russia)
P. Baláž (Slovakia)	K.D. Becker (Germany)
V.V. Boldyrev (Russia)	E. Boldyreva (Russia)
A. Calka (Australia)	G. Cocco (Italy)
J.M. Criado (Spain)	J. Foct (France)
T. Friscic (Canada)	E. Gaffet (France)
E. Gutman (Israel)	E. Ivanov (USA)
S. James (Great Britain)	R. Kumar (India)
G. Le Caër (France)	N.Z. Lyakhov (Russia)
S.P. Mehrotra (India)	Z.A. Munir (USA)
D. Oleszak (Poland)	F. Saito (Japan)
M. Senna (Japan)	V. Šepelak (Germany)
L. Takacs (USA)	D. Uskoković (Serbia)
A.Y. Yermakov (Russia)	E. Yelsukov (Russia)

**Organizing Committee:**

Krystyna Wieczorek-Ciurowa ( <i>Chair</i> )	Dariusz Oleszak ( <i>Chair</i> )
Dorota Bucka	Stanisław Famielec
Piotr Dulkan	Teodora Sikora

## Preface

The 8th International Conference on Mechanochemistry and Mechanical Alloying was held from 22nd till 26th of June 2014, in Krakow, Poland. This edition of INCOME was organized by the Faculty of Chemical Engineering and Technology, Krakow University of Technology and Faculty of Materials Science and Engineering, Warsaw University of Technology. The event is the continuation of the tradition of meeting in places all over the world – the first INCOME was organized in Kosice (Slovakia) in 1993, then followed by the meetings in Novosibirsk (Russia, 1997), Prague (Czech Republic, 2000), Braunschweig (Germany, 2003), Novosibirsk (Russia, 2006), Jamshedpur (India, 2008) and Herceg Novi (Montenegro, 2011). During 8th INCOME, 68 participants from 14 countries presented 9 invited talks, 25 oral contributions and 48 posters. Majority of the participants came from Europe, however, there were also scientists from USA, Australia, Japan and Taiwan. For these Proceedings, 43 reviewed manuscripts were accepted and submitted for publication.

During over twenty years of INCOME history, the scope has been significantly widened, the modification of the title of the Conference to the present one being the evidence of these changes. The materials covered in the Conference included, but were not limited to, mechanochemical reactions and processing in solid state science and technology, structural characterization, thermodynamics and modelling, kinetics and solid state processes, properties, applications and new materials/processes/equipment, mechanical alloying, powder characterization and sintering. Various aspects of the materials science were discussed: modelling, manufacturing, characterization of structure and properties, performance and applications. The participants presented the phenomena, relationships and observations, and shared their ideas and doubts, opening space to fruitful discussions. Theoretical and empirical approaches to the raised issues were presented, as well as the practical applications of the studied materials.

We wish to express our sincere thanks to all those who contributed to the success of 8th INCOME: the members of the International Advisory Committee, the session chairpersons, invited speakers and all the contributing participants. The contributions from colleagues of the Organizing Committee are gratefully acknowledged.

Krystyna Wieczorek-Ciurowa  
Krakow University of Technology

Dariusz Oleszak  
Warsaw University of Technology  
Chairmen of INCOME2014