

Association of Metallurgical Engineers of Serbia  
Faculty of Technology and Metallurgy, University of Belgrade  
Serbian Foundrymen's Society  
Metallurgical Academic Network of SEE Countries  
Institute for Technology of Nuclear and Other Mineral Raw Materials  
Institute of Chemistry, Technology and Metallurgy  
Vinca Institute of Nuclear Sciences

# MME SEE

# 2017

Metallurgical & Materials  
Engineering Congress  
of South-East Europe

# BOOK OF ABSTRACTS

June, 1<sup>st</sup> - 3<sup>rd</sup> 2017, Belgrade, Serbia

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Editors:

Karlo T. Raić  
Dragomir Glišić

June 1-3, 2017  
Belgrade, Serbia



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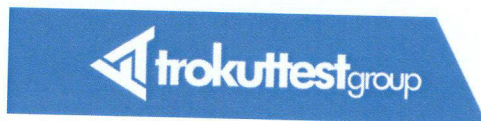
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## PREFACE

The Third Metallurgical & Materials Engineering Congress of South-East Europe (MME SEE 2017), organized by Association of Metallurgical Engineers of Serbia and Faculty of Technology and Metallurgy University of Belgrade, takes place in Belgrade, Serbia, 01-03 June 2017. This is a biannual meeting of specialists, scientists and professionals working in the field of metallurgical and materials engineering. The aim of the congress is to present current research results related to processing/structure/property relationships, advances in processing, characterization and applications of modern materials.

The Congress is aided by the Metallurgical Academic Network of SEE Countries, SEE Associations of Metallurgical Engineers and Chambers of Commerce of SEE Countries, Serbian Foundrymen's Society, Institute for Technology of Nuclear and Other Mineral Raw Materials, Institute of Chemistry, Technology and Metallurgy and Vinca Institute of Nuclear Sciences.

The Congress involves together a wide range of related topics and presents the views from both academia and industry. Future of metals/materials industry in South-East European countries; Raw materials; New industrial achievements, developments and trends in metals/materials; Ferrous and nonferrous metals production; Metal forming, casting, refractories and powder metallurgy; New and advanced ceramics, polymers and composites; Characterization and structure of materials; Recycling and waste minimization; Corrosion, coating, and protection of materials; Process control and modelling; Nanotechnology; Sustainable development; Welding; Environmental protection are all covered in the Book of abstracts.

The Editors hope that the Congress will stimulate new ideas and improve the knowledge in the field of metallurgical and materials engineering.

The Editors would like to thank the Scientific and the Organizing Committee, the Congress Secretariat - CONGREXPO d.o.o. and all those who helped in making the Congress a success.

Exceptionally grateful to the sponsors without whom our Congress would not be possible:

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We would like to express sincere appreciation to the Ministry of Education, Science, and Technological Development of the Republic of Serbia for their endeavor to make this Congress successful.

*Editors*



## COMPARISON OF CAVITATION EROSION RESISTANCE OF MULLITE AND ZIRCON SAMPLES BASED ON NON DESTRUCTIVE CHARACTERIZATION

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Mullite and zircon are widely used for different applications for refractory materials. In this paper their cavitation erosion resistance will be investigated. Cavitation erosion resistance testing will be applied using standard the ultrasonic vibratory cavitation set up with stationary specimen. Weight loss, image analysis, and ultrasonic measurements (Dynamic Young modulus of elasticity) will be used for determination of the effects of cavitation.

In this paper image analysis will be implemented for monitoring degradation level during the testing, as well as number of formed pits and their characterization (average diameter and area). Ultrasonic measurements will be related to the determination of Dynamic Young modulus of elasticity. Ultrasonic velocities will be measured and used as controlling factor for degradation level during the cavitation erosion testing.

Obtained results will be discussed in order to compare and analyze resistance of the different materials (mullite and zircon) to cavitation erosion as well as strengths and weaknesses of the used methodology.

**Keywords:** mullite, zircon, wear resistance (cavitation erosion), image analysis, level of degradation, UPVT