

Research Bulletin of the Australian Institute of High Energetic Materials 2010

**International Conference on High Energetic Materials and
Dynamics of Ultrafast Reactive Systems 2010 and
Interdisciplinary Conference on Chemical, Mechanical and
Materials Engineering 2010**

**Also includes papers from the 2010 Scientific Symposium on
Socio-Economic Impact of Natural Climate Change and the
Perpetual Engineering V-Conference of the Australian Institute of
High Energetic Materials**

ISBN: 978-1-61782-924-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Additional copies of this publication are available from:

Curran Associates, Inc.
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

The 2010 Research Bulletin of the Australian Institute of High Energetic Materials was produced and published by:

Australian Institute of High Energetic Materials
ABN: 68 126 426 917
E-mail: contact@ausihem.org
Web: <http://www.ausihem.org>

First Published April, 2011

ISBN: 978-1-61782-924-6 (Print Edition)
ISBN: 978-0-9806811-8-5 (Electronic Edition)

285 pages

© The Australian Institute of High Energetic Materials is the proprietor of the copyrights on the content of the Research Bulletin of the Australian Institute of High Energetic Materials, unless it is otherwise indicated throughout the materials presented. The current issue of the Research Bulletin of the Australian Institute of High Energetic Materials contains a selection of manuscript submitted to the 2010 International Conference on High Energetic Materials and Dynamics of Ultrafast Reactive Systems, the 2010 Interdisciplinary Conference on Chemical, Mechanical and Materials Engineering, the 2010 Scientific Symposium on Socio-Economic Impact of Natural Climate Change and the Perpetual Engineering V-Conference of the Australian Institute of High Energetic Materials.

NOT FOR RESALE. All materials published in the Research Bulletins of the Australian Institute of High Energetic Materials are protected by copyright. Owners of legally obtained copies of the Research Bulletins of the Australian Institute of High Energetic Materials are permitted to use these materials for personal study and research only, as permitted under the Copyright Act. Use of these materials for any other purposes, including copying or resale may infringe copyright unless written permission has been obtained from the copyright owner. Enquiries should be made to the publisher.

Copyright © Australian Institute of High Energetic Materials – All rights reserved

2010 Research Bulletin of the Australian Institute of High Energetic Materials

Content

Page:	Title:	Author(s):
10	Fuzzy-Decision-Making Problems of Fuel Ethanol Production using a Strain <i>Saccharomyces Cerevisiae</i>	Petrov M., Ilkova T., Roeva O.
29	Crashworthiness Design of Thin-Walled Box Section Beams Using FEA and RSM	Liu, Y.
39	Design and Modeling of Thin-Walled Tubular Structures during Crashworthiness Analysis	Liu, Y.
49	Crashworthiness Response and Design of Tapered Thin-Walled Square Beams	Liu, Y.
58	Modeling, Analysis, and Design of Thin-Walled Curved Hexagonal Beams in Crash	Liu, Y.
68	Study of Crash Energy Absorption Capability of Thin-Walled Curved Beams with Box and Channel Cross Sections Using FEA	Liu, Y.
79	Modeling and Simulation of Thin-Walled Columns with Triangular Cross-Section	Liu, Y.
91	Modeling, Analysis, and Design of Multi-Corner Thin-Walled Columns	Liu, Y.
102	Design of Lightweight Thin-Walled Beams with Enhanced Stiffness	Liu, Y.
112	An Integrated Model for Mechanical Damage and Burning Response in PBX	Gould P.J., Cullis I.G.
120	A New Method for Testing Rocket Kerosene Performance	Li X., Zhang Z.-Y., Wan X.-J.
126	Investigation on Rate of Formation of Crystallisation Centres of Mixtures of TNT and Ammonium Nitrate	Ganev R., Grozev V.
129	Development of Computing Models of Propellant Combustion by Means of Data Mining	Abrukov V.S., Karlovich E.V., Abrukov S.V.
145	Thermodynamics as the Tool of Determination of Nanocomponent's Characteristics of High-Energy Materials	Babuk V.A., Salimullin R.M.
149	Effects of Burning Rate Modifiers on the Modified Polyvinyl Chloride-Based Propellants	Bozic V.
155	Study on preparation of aluminized ammonium nitrate explosive with obsolete HTPB propellant	Jiang D.-Y., Chen Y.-P., Wang X.-J.
162	Bone-Type Effect on Mechanical Stress Fields in Dental Implants by using a 3D FEM	Muslih I.M
170	Application of Nanometer Materials for Propellants, Pyrotechnics and Explosives	Li F., Jiang W., Guo X., Liu L., Ma Z., Chen W., Wu S.
190	Novel Study and Analysis the Uranium Bomb Effects of the Detonation Explosive Charges	Ibrahim A.S., Al-Salim H.S.
196	The use of inkjet printing as a tool for preparation of nanothermites: some first results	Liberska A., Delaney J.T., Liberski A.R., Wett D., Weiß U., Nestler D., Wielage B., Schubert U.S.
201	Experimental investigation and design of experiments for optimizing the process parameters for improved surface finish in Roller burnishing process	Prasad K.E., Rao G.K.S., Prasad B.A.
211	Dynamic characteristics of magnetic composite gel	Venkateswara R., Maniprakash S., Jayaganesh N., Srinivasan S., Patnaik B.



Content (cont.)

Page:	Title:	Author(s):
217	New acceleration analysis of a rotating point in mechanics	Usubamatov R.
226	Centrifugal Forces are Cause of Gyroscope Stabilization	Usubamatov R., Zain Z.M., Zaiiazmin Y.N., Hussin M.S.
233	Impeller type wind turbine	Usubamatov R., Zain Z.M., Khammas F.A., Younus A.
242	A study on the As Reasonably Practicable (ALARP)-Concept Risk Assessment of Silane in Semiconductor and LCD Process	Lee J.H., Park H.C., Hwang S.M., Woo I.S., Stamatov V.
251	Climate Change: Ignorance of the Reality	Onweremadu E.U., Eshett E.T
260	Effect of Processing Parameters on the Mechanical Properties and Wear Behavior of W-Cu Composites	Hegazy A.A, Abdallah M., Ibrahim A., Mostafa S.F.
273	The process and properties research of Ni-P-SiC chemical composite plating on surface of the mould	Hou J.Y., Zhao Y.W.
279	Improvement of ballistic properties of HTPB based composite propellant grains using TBF	Hussain G., Anjum S., Hussain R., Malik A.Q., Hameed A., Hetherington J.