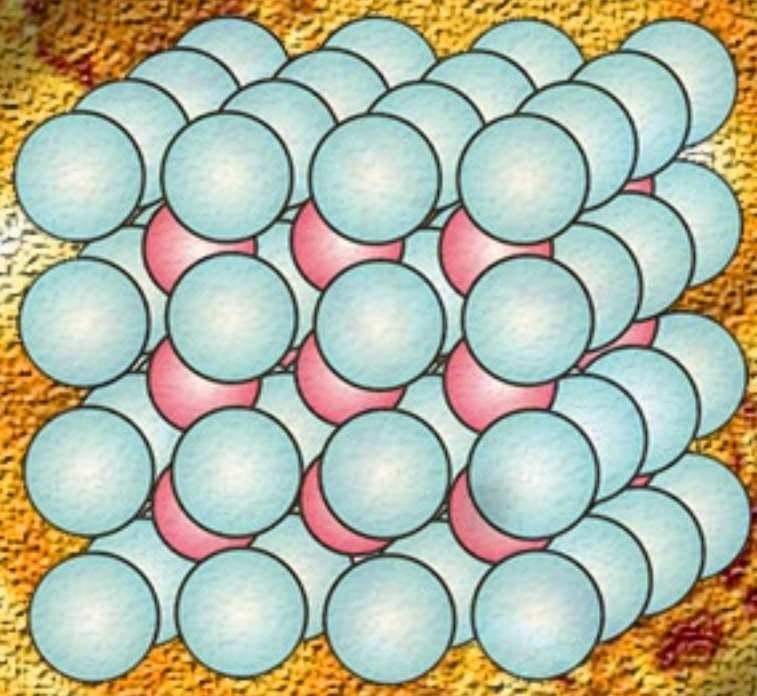
INTERNATIONAL SCIENTIFIC JOURNAL

"MATERIAL SCIENCE"



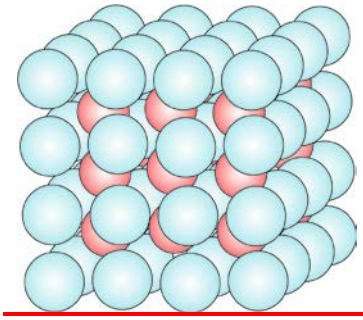
„NONEQUILIBRIUM PHASE TRANSFORMATIONS"

YEAR III, ISSUE 3/2017

ISSN PRINT 2367-749X
ISSN WEB 2534-8477

PUBLISHER: SCIENTICIC TECHNICAL UNION OF MECHANICAL ENGINEERING INDUSTRY 4.0

108 Rakovski str., 1000 Sofia, Bulgaria
tel./fax (+359 2) 986 22 40, tel. (+359 2) 987 72 90,
office@stumejournals.com, www.stumejournals.com



INTERNATIONAL SCIENTIFIC JOURNAL

MATERIALS SCIENCE. NON-EQUILIBRIUM PHASE TRANSFORMATIONS

PUBLISHER:

SCIENTIFIC TECHNICAL UNION OF MECHANICAL ENGINEERING

108, Rakovski Str., 1000 Sofia, Bulgaria
tel. (+359 2) 987 72 90,
tel./fax (+359 2) 986 22 40,
office@stumejournals.com

ISSN PRINT 2367-749X, ISSN WEB 2534-8477
YEAR III, ISSUE 3 / 2017

EDITORIAL BOARD

CHIEF EDITOR
Prof. Dimitar Stavrev – Bulgaria

DEPUTY EDITOR:
Dr. Alexander Krugljakow, Germany
Prof. Sergey Dobatkin, Russia
Prof. Sergey Nikulin, Russia
Prof. Victor Anchev, Bulgaria

RESPONSIBLE SECRETARY:
Assoc. Prof. Tsanka Dikova, Bulgaria

MEMBERS:

Prof. Adel Mahmud, Iraq
Prof. Anna Proikova, Bulgaria
Prof. Bekir Sami Yilbas, Saudi Arabia
Prof. Dermot Brabazon, Ireland
Prof. Dipten Misra, India
Assoc. Prof.Eugeniy Grigoriev, Russia
Prof. F. W. Travis, United Kingdom
Prof. Gennagiy Bagluk, Ukraine
Assoc. Prof. Ibrahim E.Saklakoglu, Turkey
Prof. Iis Sopyan, Malaysia
Prof. Ivan Parshorov, Bulgaria
Prof. Ivanja Markova, Bulgaria
Prof. Janez Grum, Slovenia
Prof. Jens Bergstrom, Sweden
Prof. Leszek Dobrzanski, Poland
Prof. Ludmila Kaputkina, Russia
Prof. Nikolai Dulgerov, Bulgaria
Prof. Omer Keles, Turkey
Prof. Plamen Danev, Bulgaria
Prof. Rui Vilar, Portugal
Prof. Rusko Shishkov, Bulgaria
Prof. Saleem Hashmi, Ireland
Dr. Sefika Kasman, Turkey
Prof. Seiji Katayama, Japan
Prof. Souren Mitra, India
Dr. Sumsun Naher, United Kingdom
Prof. Svetlana Gubenko, Ukraine
Prof. Sveto Cvetkovski, Macedonia
Prof. Ventsislav Toshkov, Bulgaria
Prof. Yovka Dragieva, Bulgaria

C O N T E N T S

STRUCTURAL-PHASE TRANSFORMATIONS DURING CONTINUOUS COOLING OF MEDIUM-CARBON HIGH-STRENGTH STEELS WITH DIFFERENT CONTENT OF MOLYBDENUM AND NIOBIUM
Prof. Koptseva N.V., PhD Chukin D.M., Gushchina M.S. 78

TRANSFORMATION OF HETEROPHASE NON-METALLIC INCLUSIONS "HIGH-MELTING PHASE SURROUNDING WITH LOW-MELTING COVER" IN STEELS UNDER LASER ACTION
Prof.. Dr. Sci. Gubenko S. 82

SCHEME OF TREATMENT AND ITS EFFECT ON THE STRAIN HETEROGENEITY AND STRUCTURAL CHANGES IN BILLETS OF LOW-CARBON STEEL
V.I. Semenov, G.A. Aleshin, A.G. Raab, N. Tontchev, V. Kamburov, E. Yankov 87

NANOCOMPOSITE MATERIALS BASED ON THERMOPLASTIC BLENDS FOR THE TECHNOLOGICAL EQUIPMENT WITH A LONG SERVICE LIFE
Senior lecturer Antonov A., Assoc. Prof. cand. eng. Avdeychik S., Senior lecturer Sarokin V., Prof. Dr. Eng. Struk V.,
Assoc. Prof. cand. eng. Vorontsov A., Assoc. Prof. cand. eng. Mikhailova L. 92

EFFECT OF HOT PLASTIC DEFORMATION ON DECOMPOSITION OF MAGNESIUM SOLID SOLUTION CONTAINING RARE-EARTH METALS
Prof. Rokhlin L.L., PhD. Lukyanova E.A., PhD. Dobatkina T.V., Korolkova I.G., Ovchinnikova O.A. 95

PRODUCTION OF POWDER POROUS MATERIALS FROM MECHANICALLY ACTIVATED ALUMINUM OXIDE
Prof., Dr. Eng., Cor. Member of NAS of Belarus Ilyushchanka A., Cand. Eng., Docent Kusin R., Cand. Eng., Docent Letsko A.I.
Charniak I., Zhehzdryn D., Ilyukevich A. 98

EFFECT OF OXYGEN AND NITROGEN CONTENTS ON THE STRUCTURE OF THE Ti-6Al-4V ALLOY MANUFACTURED BY SELECTIVE LASER MELTING
Prof. Kazantseva N. Dr.of Sci., Prof. Krakhmalev P. PhD., Yadroitsev I. PhD., Fefelov A. PhD., Merkushev A., Ilyinikh M. ,
Vinogradova N. PhD., Ezhov I. PhD Student, Kurennykh T. PhD. 101

ELASTIC PHASE TRANSITION IN METALS: THE PRESSURE EFFECT
Dr. Krasilnikov O.M., Prof, Dr. Vekilov Yu.Kh., PhD Lugovskoy A.V., PhD Belov M.P. 104

INFLUENCE OF THERMAL-CYCLIC DEFORMATION AND HEAT TREATMENT ON THE STRUCTURE AND PHYSICAL PROPERTIES OF STEEL 10
D.Sc. (Eng.), Prof. Prudnikov A., Ph.D. student Prudnikov V. 108

PRESSURE DERIVATIVES OF ELASTIC CONSTANTS OF ALUMINUM ALLOY AMg6 AND NANOSTRUCTURED ALLOY n-AMg6. COMPARISON OF EXPERIMENTAL AND CALCULATED FROM THIRD-ORDER ELASTIC CONSTANTS DATA
Assoc. Prof., Dr. Prokhorov V., Leading Res., Dr. Gromnitskaya E. 111

RESIDUAL STRESSES AND FRACTURE TOUGHNESS BORIDE CERAMIC COMPOSITES WITH MONOCRYSTALLINE MATRIX
Soloviova T.O.,Loboda P.I., Karasevska O.P., Samsonik I.V. 115

C-BETAVOLTAIC ENERGYCONVERTER IN POR-SIC/SI
V.I.Chepurnov, M.V.Dolgopolov, A.V.Gurskaya, A.A.Akimchenko, O.V.Kuznetsov, A.V.Radenko, V.V.Radenko, A.S.Mashnin 119