

3rd International Biannual Conference "Electron Beam Welding and Related Technologies" (EBW2019)

IOP Conference Series: Materials Science and Engineering
Volume 759

Moscow, Russia
12 - 15 November 2019

Editor:

Viktor Dragunov

ISBN: 978-1-7138-2661-3
ISSN: 1757-8981

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.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2021)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

EXPERIENCE OF FORMING COMBINED LOW-ENERGY ELECTRON-ION BEAMS IN PLASMA SOURCES OF CHARGED PARTICLES	1
<i>D A Antonovich, V A Gruzdev</i>	
EVALUATION OF INFLUENCE OF TECHNOLOGICAL PARAMETERS ON WIDTH OF STRENGTHENED LAYER IN PLASMA SURFACE HARDENING OF STRUCTURAL STEELS.....	8
<i>A E Balanovsky, V E Gozbenko, S K Kargapol'Tsev, A I Karlina, Yu I Karlina</i>	
NON-VACUUM ELECTRON BEAM WELDING AND CUTTING OF CUPPER.....	13
<i>T Hassel, A Beniyash, G Klimov</i>	
EFFECTS OF LASER TREATMENT MODES ON THE PARAMETERS OF THE HARDENING ZONES AND THE WEAR RESISTANCE OF STEEL 40CR.....	23
<i>V P Biryukov, V N Petrovsky, D V Panov, D V Ushakov</i>	
BEAM DIAGNOSTICS ON THE ELECTRON BEAM WELDING INSTALLATION AT BUDKER INSTITUTE OF NUCLEAR PHYSICS	29
<i>K A Blokhina, T A Devyataykina, A M Medvedev, Yu I Semenov, M M Sizov, A A Starostenko, A S Tsyganov</i>	
ELECTRON-BEAM WELDING OF LARGE THICKNESS PARTS IN A NARROW GAP	37
<i>I S Chulkov, A L Goncharov, A V Chulkova</i>	
CREATION OF CORROSION RESISTANT COATINGS ON DUCTILE IRON BY REMELTING FLAME SPRAYED LAYERS USING LASER AND ELECTRON BEAM.....	43
<i>D Drimal, F Kolenic, M Simek</i>	
RESEARCH OF THERMOELECTRIC EFFECTS AND THEIR INFLUENCE ON ELECTRON BEAM IN THE PROCESS OF WELDING OF DISSIMILAR STEELS.....	53
<i>A L Goncharov, A P Sliva, I A Kharitonov, A V Chulkova, E V Terentyev</i>	
RESEARCHES OF METAL TEXTURE AFTER FRICTION STIR WELDING.....	60
<i>V E Gozbenko, A E Balanovsky, S K Kargapol'Tsev, Yu I Karlina, A I Karlina</i>	
RESEARCH OF MECHANICAL PROPERTIES AND CHEMICAL COMPOSITION OF SAMPLES MADE OF ALUMINIUM ALLOY AMG6 AND OBTAINED BY ELECTRON BEAM ADDITIVE MANUFACTURING WITH WIRE FEEDING	66
<i>A V Gudenko, G V Grigoriev, A P Sliva, R Yu Agafonov, A N Kasitsyn</i>	
POSSIBILITY OF OBTAINING COMPLEX FORM DETAILS USING ADDITIVE SURFACE TECHNOLOGY	72
<i>S K Kargapol'Tsev, A E Balanovsky, V E Gozbenko, Yu I Karlina, A I Karlina</i>	
CHALLENGES IN PATH PLANNING OF HIGH ENERGY DENSITY BEAMS FOR ADDITIVE MANUFACTURING	77
<i>K P Karunakaran, Seema Negi, Arun Nambolan, Ashik Patel, Yogesh Patil, Milan Pandya, Sajan Kapil, Dmitriy Trushnikov, Michael Sealy, Alain Bernard</i>	
CONTROL OF ELECTRON BEAM WELDING PARAMETERS BASED ON THE GAP SCANNING SYSTEM DATA DURING THE WELDING PROCESS.....	86
<i>A N Kasitsyn, R Yu Agafonov, A V Leonov, G V Grigoriev</i>	

STUDY ON FORMATION OF ALUMINUM ALLOY THIN WALL PRODUCED WITH WAAM METHOD UNDER VARIOUS THERMAL CONDITIONS	92
<i>A V Kisarev, N V Kobernik</i>	
ANALYSIS OF THE AMPLITUDE-TIME PARAMETERS OF CURRENT PULSES IN A PLASMA DURING LASER BEAM WELDING.....	99
<i>I Yu Letyagin, V Ya Belenkiy, D N Trushnikov, S Pang</i>	
EXPRESS EVALUATION OF WELDED JOINTS COOL RESISTANCE	106
<i>V M Matyunin, A Yu Marchenkov, M A Karimbekov, A N Demidov, P V Volkov, N Abusaif, E I Geraskin, D A Zhgut</i>	
MODIFICATION OF THE SURFACE OF STEEL 3KH2V8F BY APPLICATION B-AL-COATINGS BY METHODS OF THERMAL-CHEMICAL TREATMENT AND ELECTRON-BEAM PROCESSING	112
<i>U L Mishigdorzhyn, N S Ulakhanov, A S Milonov, A P Semenov</i>	
INFLUENCE OF TECHNOLOGICAL PARAMETERS OF SPRAYING ON MECHANICAL PROPERTIES OF GAS-DYNAMIC COATINGS	119
<i>G V Moskvitin, M S Pugachev</i>	
EFFECT OF MOLYBDENUM ON THE HOT-TEARING SUSCEPTIBILITY OF THE NI-CR-MO-B SYSTEM.....	126
<i>A S Nazarko, R L Plomoyalo, D V Dmitrenko</i>	
DEVELOPMENT OF METHODS FOR FORECASTING THE MICROSTRUCTURE OF THE WELDED JOINT WITH REFERENCE TO THE TEMPERATURE-TIME MODES OF ELECTRON-BEAM WELDING.....	132
<i>T V Olshanskaya, E M Fedoseeva</i>	
NUMERICAL MODEL OF A HOLLOW CATHODE ARC DISCHARGE FORMATION IN VACUUM	139
<i>G L Permyakov, D N Trushnikov, M K Mindibaev, E G Koleva</i>	
COMPUTER SIMULATION OF METALS IONIZATION PROCESS DURING ELECTRON-BEAM WELDING.....	144
<i>R V Rodyakina, A V Shcherbakov, D A Gaponova</i>	
THRESHOLD CONDITIONS FOR THERMOCAPILLARY TRANSITION TO DEEP PENETRATION MODE IN SELECTIVE LASER MELTING OF METAL POWDER BED.....	150
<i>R D Seidgazov, F Kh Mirzade</i>	
HEAT TREATMENT MODE OPTIMIZATION OF DISSIMILAR WELD JOINTS OF EP517 STEEL TO 36NKHTYU ALLOY	160
<i>E V Terentyev, A Yu Marchenkov, A L Goncharov, A P Sliva, K T Borodavkina</i>	

Author Index