

CONTENTS

Metalurgia International 12/2008

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SUSTAINABLE DEVELOPMENT5-16

CALEA GHEORGHE, ȘTEFAN CRISTINA, ȘERBAN MIHAI, CIOACA CEZAR, SOHACIU MIRELA:

Theoretical researches about the evaluation of the impact of the electrical power plants to the environment..... 5-10

ILCA IOAN, TODEA VIORICA:

Climate changes – a major global challenge.....11-16

MATERIALS SCIENCE RESEARCH AND DEVELOPMENT17-90

GHIBAN NICOLAE, SERBAN NICOLAE, SEMENESCU AUGUSTIN, GHIBAN BRÂNDUȘA:

2d modelling of the “yalle body” extrusion process

.....17-21

RĂDUCANU DOINA, DAN I., CINCA ION, IVANESCU S., COJOCARU V. DĂNUȚ:

Mechanical proprieties and microstructural features of a new solder Ag-Au-Pd-Ti alloy..... 22-25

IVĂNUȘ RADU CRISTIAN :

Research concerning manufacturing of copper based cellular material for electronic cooling applications

.....26-32

CIOBANU IOAN, ȚUȚUIANU DIANA:

Analysis of materials used for the casting of art works

.....33-41

CIOATĂ VASILE GEORGE:

Determination of the moulding time of alloys processed in a semi-solid state 42-52

NEAGU CORNELIU, DUMITRESCU ANDREI,

DOICIN CRISTIAN, BERINDE MIHAELA:

Determination of process functions in electro-erosion machining of threads from sintered metallic carbides

.....53-65

IVĂNUȘ DANIELA:

Studies regarding the mineralization of the water from the Ionele-Urzicuta lake, Dolj county.....66-75

ZAIT DUMITRU, VELICU STEFAN, CORĂBIERU PETRICĂ, VASILESCU DAN DRAGOȘ:

Tendences and solutions regarding the development of the metallic products for auto-vehicles.....76-81

MARECI DANIEL, ROMEU CHELARIU, GORDIN DOINA-MARGARETA, GLORIAN THIERRY, CARCEA IOAN:

Preliminary testing of corrosion behaviour of Ti6Al7Nb and Ti30Ta alloys in artificial saliva with additions of fluoride ions and lactic acid.....82-90

ECONOMIC AND FINANCIAL MANAGEMENT. ACCOUNTANCY IN METALLURGY91-105

MOROȘANU COSTICĂ, IORGA GHEORGHE, COCINDĂU SANDA CIREȘICA:

Numerical simulation of the solid region via phase –field transition system.....91-95

LEPĂDATU V. GHEORGHE:

Provisions, contingent liabilities and contingent assets – IAS 37.....96-100

BADEA DUMITRU G., NOVAC LAURA ELLY,

ANDREESCU ILEANA:

The protection of the employees working in the metallurgical industry through specific insurance programs.....101-105

FOSECO Turbostop system – reference list..... I-II

New books, published by Romanian Metallurgical

Foundation.....III-IV

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ABSTRACT

Metalurgia International 12/2008

SUSTAINABLE DEVELOPMENT5-16

D.C.

Keywords:

CALEA GHEORGHE, ȘTEFAN CRISTINA, ȘERBAN MIHAI, CIOACA CEZAR, SOHACIU MIRELA:

Theoretical researches about the evaluation of the impact of the electrical power plants to the environment

This material presents problems regarding the evaluation of the impact of the electrical power plant to the environment.

Metalurgia International 2008, no. 11, p. 5

D.C.

Keywords: *greenhouse effect, climate changes, ozone.*

ILCA IOAN, TODEA VIORICA:

Climate changes – a major global challenge

The extreme global scale meteorological phenomena that occurred during the last years have alerted the entire mankind about the danger of the global heating caused by the greenhouse effect. Correct and rapid measures must be taken for the efficient approach of the climate changes challenges in accordance with the provisions of the United Nations Framework Convention on Climate Changes and with the commitments undertaken through the Kyoto Protocol.

Metalurgia International 2008, no. 11, p. 11

MATERIALS SCIENCE RESEARCH AND DEVELOPMENT17-90

D.C.

Keywords: *modelling, extrusion, non-uniformity, Von Mises criterion, die cavity*

GHIBAN NICOLAE, ȘERBAN NICOLAE, SEMENESCU AUGUSTIN,

GHIBAN BRÂNDUȘA:

2d modelling of the “yalle body” extrusion process

The non-rounded products plastically formed by direct extrusion often have specific non-uniformity of the mechanical properties either across transversal section, or on the length of the semifinished product. These non-uniformities (observed in laboratory tests) were put in evidence by industrial tests. Modelling using finite elements was used in order to show the difference between the optimum and the non-optimum position of the die cavity during direct extrusion process. It was used a COSMOS M 1.65 programme for modelling. The model allows the study of processes in plastic field only up to the moment in which the first plastic formed zone appears. The stress and elongation distribution has been studied for the quasistationary extrusion process. The results showed the non-uniformity of the total and partial deformation and also of the equivalent stresses for both conditions (the optimum and the non-optimum position of the die cavity).

Metalurgia International 2008, no. 11, p. 17

D.C.

Keywords: *structure, mechanical proprieties, noble-metal alloys, rolling.*
RĂDUCANU DOINA, DAN I., CINCA ION, IVANESCU S., COJOCARU V. DĂNUȚ:

Mechanical proprieties and microstructural features of a new solder Ag-Au-Pd-Ti alloy
The aim of the work is to present data concerning synthesis, structural features and mechanical characteristics for a new solder Ag-Au-pd-Ti alloy. A new solder Ag-Au-pd-Ti alloy was obtained by melting in a induction melting furnace, with chemical composition as follows: Ag - 72,97 wt%; Au - 8,84wt%; Pd - 7,41 wt%; Cu - 7,59 wt%; Ti - 1.27 wt%.

Internal microstructure for as-cast alloys consist in a dendritic Ag-based solid solution and fine mixture of another eutectic phase and a compound (that due to dendritical segregation which can favorize formation of these constituents). Also, small pores were observed. Alloy's main mechanical characteristics are as follows; Ultimate tensile strength: 338 daN; Offset yield strength: 306 daN; Relative elongation: 7.32 %.

Metalurgia International 2008, no. 11, p. 22

D.C.

Keywords: *copper, hollow particles, sintering, cellular material, heatsink*
IVĂNUȘ RADU CRISTIAN :

Research concerning manufacturing of copper based cellular material for electronic cooling applications

For manufacturing of lightweight structures, different methods are viable. One of them is to start from hollow powder particles which are then either carefully compacted and sintered or are simply gravity sintered. For this purpose, hollow Cu spheres were produced by cementation of Cu on spherical Fe powder particles and then etching away the remaining Fe with HCl. The resulting hollow Cu particles are comparatively fragile, with a rugged shell surface. By heat treatment it proved possible to attain both smoothening and significant strengthening of the shell. Gravity sintered specimen exhibited a quite attractive strength-to-weight ratio. The present study analyzes the operational behaviour of the copper based cellular material as far as the heat dissipation of the semiconductor devices is concerned. The material can be successfully used in the heatsink industry when discussing matters concerning its choice or even manufacturing.

Metalurgia International 2008, no. 11, p. 26

D.C.

Keywords: *art work, casting, bronze, multi-criteria analysis, value analyse*

CIOBANU IOAN, ȚUȚUIANU DIANA:

Analysis of materials used for the casting of art works

The paper analyzes the importance of a series of materials used for the casting of art works and interior decoration objects. Starting from the main technological and aesthetic properties of each material an advanced comparative multi-criteria analysis is carried out from the viewpoint of achieving art works and interior decoration objects. The analysis yields a performance coefficient for bronze that rates it practically at the same level as precious metals like gold, silver and platinum. Thus the rationale for most art works being cast of bronze is highlighted.

Metalurgia International 2008, no. 11, p. 33

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ABSTRACT

Metalurgia International 12/2008

<p>MATERIALS SCIENCE RESEARCH AND DEVELOPMENT17-90</p> <p>D.C. Keywords: Semi-solid state, thixotropy, technological parameters, moulding time, finite element CIOATĂ VASILE GEORGE: Determination of the moulding time of alloys processed in a semi-solid state The paper approaches the Thixoforming and Rheocasting techniques of processing alloys in a semi-solid state, identifying the technological parameters of a variant of the Rheocasting technique in order to determine analytically and by simulation, using the finite element method, the moulding time for a piece. This technological parameter is of utmost importance in the phase of technology designing, as it is directly related to the productivity of the process and the production costs. In order to validate the moulding time, the results we obtained have been compared to the experimental ones, the conclusion being that the suggested calculation methods are appropriate to this technological parameter. Metalurgia International 2008, no. 11, p. 42</p> <p>D.C. Keywords: Steel, Continuous casting, Solidification, Structure, Micro-coolers. NEAGU CORNELIU, DUMITRESCU ANDREI, DOICIN CRISTIAN, BERINDE MIHAELA: Determination of process functions in electro-erosion machining of threads from sintered metallic carbides One of the main streams of contemporary technological development is the use of electro-technologies on an increasing large scale. Amongst these technologies, the electro-erosion has an important share, because of the advantages offered in machining of hard and extrahard materials. And these materials are used more often in fields like manufacturing of cutting tool, precision mechanics, aeronautics, etc. In the present paper, the authors present some of the results obtained in their theoretical and experimental researches regarding the machining of interior threads in sintered metallic carbide using copper milled electrode. These results are mainly about the influence of electro-technological parameters on thread's pitch p and flank angle α. Workability functions were determined for these two geometrical parameters. The workability functions are useful in the establishment of electro-technological parameters for electro-erosion of threads. Metalurgia International 2008, no. 11, p. 53</p> <p>D.C. Keywords: mineralization, physical - chemical indicators, mineral waters IVĂNUȘ DANIELA: Studies regarding the mineralization of the water from the Ionele-Urzicuța lake, Dolj county</p>	<p><i>The study of the mineral waters from Ionele-Urzicuța Lake, Dolj County, was carried out in order to characterize them, with a view to their inclusion among the Romanian mineral waters and their utilization for therapeutical purposes. The in-situ observations and the mineralization of the Ionele-Urzicuța Lake water spread over a period of 4 years (2002-2005). The experimental data show that, due to their qualities, these waters are characterized by a high mineralization and they can be included among the Romanian mineral waters, having sulphate-carbonatic characteristics. Thus, financial efforts necessary for their capitalization achieved by their inclusion in the balneologic circuit, become justified</i> Metalurgia International 2008, no. 11, p. 66</p> <p>D.C. Keywords: development of metallic products for auto-vehicles ZAIT DUMITRU, VELICU STEFAN, CORĂBIERU PETRICĂ, VASILESCU DAN DRAGOȘ: Tendencies and solutions regarding the development of the metallic products for auto-vehicles The auto-vehicles industry will become one of the locomotives of the Romanian industries, what implies measures and solutions regarding the development of the products. The authors point out the solutions regarding the actual situations of the world market of the auto-mobiles industry related to the development of the products that are oriented on 5 main directions. Conforming to the performed study, the Romanian creators and producers have to frame into the cost-quality matrix imposed on the EU market, bringing into prominence the optimization of the shape, of the design of the materials and implementation of the design concept oriented on the product. It is necessary to develop a methodology of evaluation of the motivation and management style in creative solving of the problems and the creation of a system of indicators and models for the measurement and supporting of the management of the performance of innovation activity in the products development. The efforts have to be focused on the development of the capacity of everyone to surpass the pre-established schemes of thinking and acting. The identification and putting into action of a methodological unitary and coherent system of evaluation of the performance of the management of an enterprise producing equipment and metallic component parts for auto-vehicles can be achieved considering, as starting point, the tendencies and mutations anticipated on the respective market for the next years. Metalurgia International 2008, no. 11, p. 76</p>
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ABSTRACT

Metalurgia International 12/2008

<p>MATERIALS SCIENCE RESEARCH AND DEVELOPMENT 17-90</p> <p>D.C. Keywords: development of metallic products for auto-vehicles MARECI DANIEL, ROMEU CHELARIU, GORDIN DOINA-MARGARETA, GLORANT THIERRY, CARCEA IOAN: Preliminary testing of corrosion behaviour of ti6al7nb and ti30ta alloys in artificial saliva with additions of fluoride ions and lactic acid Recently, titanium is the most use metal for manufacturing dental implants. In the last decade, new titanium alloys have been developed in different areas of dentistry. Concurrently, oral treatments using gels containing fluoride have also been widely used in odontology. The aim of this study is to investigate the electrochemical behaviour of a new titanium alloy containing Ta, in four different media based on the artificial saliva having different fluoride ions and lactic acid contents, and compare it with the behaviour of Ti6Al7Nb alloy used frequently as biomaterial. To investigate the electrochemical behavior of two titanium alloys the open circuit potential recording and linear sweep voltametric analysis were used. Our results have shown that Ti30Ta alloy have corrosion resistance as good as that of Ti6Al7Nb in artificial saliva (pH = 8.0), acidified saliva (9.8 g/l lactic acid, pH = 2.5) and fluoridated saliva (1.0 g/l F, pH= 8.0). The corrosion of Ti6Al7Nb and Ti30Ta alloys is enhanced in fluoridated acidified saliva (9.8 g/l lactic acid, 1.0 g/l F, pH = 2.5). Metalurgia International 2008, no. 11, p. 82</p>	<p>D.C. Keywords: Financial statements, balance sheet, income statements, cash flowstatement, IAS/IFRS, provisions, continhent liabilities ans contingent assets LEPĂDATU V. GHEORGHE: Provisions, continhent liabilities and contingent assets – ias 37 The provision of transparent and useful information on market participants and their transaction is essential for an orderly and efficient market, and it is one of the most important preconditions for imposing market discipline. Left to themselves, markets may not generate sufficient levels of disclosure. Market forces would normally balance the marginal benefits and marginal costs of additional information disclosure and the end result may not be what the market participants really need. Metalurgia International 2008, no. 11, p. 96</p> <p>D.C. Keywords: risk management, labor security, professional illnesses, insurance BADEA DUMITRU G., NOVAC LAURA ELLY, ANDREESCU ILEANA: The protection of the employees working in the metallurgical industry through specific insurance programs When talking about environments with high-severity exposures, one that can come to our minds is the metallurgical industry, where the risk of business-interruption or the risk of work-related accidents can have significant effect upon the production outcome of the company in this field. The human resource protection has been and continues to be an important factor for the employees, due to a long history of discontentment of the ones directly involved in the production process who had no possibility of protection in case of work-accidents or professional illnesses. Just recently, professional illnesses have begun to be in the focus of the employees, after decades of law suits intended by employees unsatisfied by the public health coverage (for example, asbestosis). Thus, the focus of the employees is to find better coverages in case of work-related accidents and professional illnesses (meaning higher financial compensations) through private products offered by the insurance companies. Metalurgia International 2008, no. 11, p. 101</p>
<p>ECONOMIC AND FINANCIAL MANAGEMENT. ACCOUNTANCY IN METALLURGY 91-105</p> <p>D.C. Keywords: boundary value problems for nonlinear parabolic PDE, fractional steps method, finite element method, solidification process MOROȘANU COSTICĂ, IORGA GHEORGHE, COCINDĂU SANDA CIREȘICA: Numerical simulation of the solid region via phase –field transition system The phase field transition system (a nonlinear system of parabolic type) introduced by Caginalp [4] to distinguish between the phases of the material that is involved in the solidification process is considered. On the basis of the convergence of an iterative scheme of fractional steps type, a numerical algorithm is constructed in order to approximate the solution of nonlinear parabolic system. The advantage of such approach is that the new method simplifies the numerical computations due to its decoupling feature. The finite element method (fem) in 2D is used to deduce the discrete equations and numerical results regarding the physical aspects of solidification process are reported. Metalurgia International 2008, no. 11, p. 91</p>	

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