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ABSTRACT

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IOZSEF JUHASZ EXPERIMENTAL RESEARCHES ON THE COPPER ELECTROLYTE PURIFICATION

Keywords: *electrolyte, copper recovery, refinement, thermodynamic.*

ABSTRACT:

In this paper there are presented the experimental results obtained in the electrolyte purification process from the copper electrolytic refinement. This work was proved theory with the thermodynamic analysis in this system, as well as experimentally under various conditions.

REZUMAT:

În lucrarea de față sunt prezentate unele rezultate experimentale obținute în procesul de purificare a electrolitului de la rafinarea electrolitică a cuprului. Aceasta lucrare a demonstrat teoria cu ajutorul analizei termodinamice a sistemului, atât experimental cât și pentru diferite condiții date.

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VALER MICLE , LILIANA FODOR, TIBERIU LEHENE, IOAN VIDA-SIMITI , NICOLAIE JUMATE THE PRELIMINARY STUDIES TO ELABORATE A METALLIC COMPOSITE ALUMINUM MATRIX WITH CARBON NANOTUBES

Keywords: *aluminium matrix composite, powder metallurgy, casting, carbon nanotubes*

ABSTRACT

This paper presents the view upon the recent studies concerning the methods of obtaining aluminum matrix composite reinforced with carbon nanotubes. It is remarked the fact that the majority of the researchers approached the methodology of obtaining metal matrix composite with carbon nanotubes through the utilization of the powder metallurgy and through the infiltration of molten metal. It was experimented the realization of a composite material with matrix of aluminum and carbon nanotubes by casting. The analyses of the composite material elaborated through casting at the scanning electron microscope (SEM) showed us the fact that the uniform dispersion of carbon nanotubes in the aluminum matrix wasn't achieved, the individual presence of carbon nanotubes in the analyzed structure wasn't evidenced. The difficulties related by obtaining the metal composite with aluminum matrix and carbon nanotubes through casting lead to the necessity of identification of other solutions, among these would be the powder metallurgy.

REZUMAT

În cadrul lucrării se face o privire asupra experimentărilor de data recenta privind metodele de obținere a materialelor compozite metalice cu matrice de aluminiu armate cu nanotuburi de carbon. Se remarcă faptul că majoritatea cercetătorilor au abordat metodologia de obținere a materialelor compozite metalice cu nanotuburi de carbon prin utilizarea metalurgiei pulberilor și prin infiltrarea metalului topit. S-a încercat prin experimentări obținerea unor materiale compozite cu matrice de aluminiu și nanotuburi de carbon prin turnare. Analiza materialelor compozite elaborate prin turnare cu microscopul electronic cu baleiaj (SEM) ne-a arătat faptul că nu s-a realizat o dispersie uniformă a nanotuburilor de carbon în matricea de aluminiu, nefiind evidențiată prezența individuală a nanotuburilor în structura analizată. Dificultățile legate de obținerea materialelor compozite metalice cu matrice de aluminiu și nanotuburi de carbon prin turnare conduc la necesitatea identificării altor soluții iar dintre acestea cea mai potrivită este prin metalurgia pulberilor.

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VALENTIN ZICHIL , MIRELA PANAINTE, VALENTINE NEDEFF, EMILIAN MOSNEGUTU , CARMEN SAVIN , BOGDAN MĂCĂRESCU , CIPRIAN OLARU CONSIDERATIONS ABOUT A NEW METHOD ABLE TO DETERMINE THE BREAKING UP ENERGY AT MATERIALS WITH VARIABLE TEXTURE

Keywords: *variable texture, breaking, textural property, energy consumption, rheology.*

ABSTRACT:

The paper present a new method able to determine the breaking up energy at materials with variable texture as well as the factors which influence the breaking process in case of products with variable texture, stress and strain state into the cutting tool, during the breaking up process.

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GH. IEPURE, I. VIDA – SIMITI, N. JUMATE, MARIANA CIURDAS, V. HOTEA, I. JUHASZ

EFFECT OF ZrO₂ PARTICLES UPON Cu-ZrO₂ MATERIAL USED FOR THE SPOT WELDING ELECTRODES

Keywords: *spot welding, composites, powder metallurgy*

ABSTRACT

The paper presents the results of research on the obtaining of the Cu-ZrO₂ composite through procedures specific to powder metallurgy, destined for the resistance welding electrodes. The best results were obtained for the samples that contained 1% zirconium oxide. The electrical conductivity of the obtained Cu+1% ZrO₂ material ranges around the value of 50% IACS. The structure was analyzed by electron microscopy (SEM) and local chemical analysis (EDS). The designed electrodes were subjected to endurance tests on an automatic spot welding machine according to standards ISO 14270. The performed studies show that the size of the ZrO₂ particles should be less than 5 micrometers, since the large ZrO₂ particles break due to deformation during welding.

Metalurgia International vol XIV 2009 pg.21

CLAUDIA TĂNASE, ADRIAN DIMA, VALENTIN STRECHE THE 3D-OPERATED, CURVED TRAJECTORY UNDERGROUND PNEUMATIC ROCKET USED FOR DITCHLESS UNDERGROUND PIPE LAYING

Keywords: *pneumatic rocket, self-guided, introducing pipes, ditchless*

ABSTRACT:

A high-technology challenge: direct, ditchless, 3D varied trajectory, underground pipe laying in various public fields – water supplying, sewer, gas supplying, electric cables, telecommunications, TV broadcast, the Internet or agriculture – irrigation and / or drainage. Classical, open-ditch underground networking has been severely restricted due to economic, social and environmental factors. In the developed countries only high-standard, highly productive ditchless technology is applied. After building and testing the pneumatic rocket FORI 80, operated in straight line, we want to present the self-guided, curved trajectory, pneumatic rocket for ditchless underground pipe laying.

Metalurgia International vol XIV 2009 pg.26

IOAN GHIMBĂȘEANU INTERACTIVE SOFT FOR DETERMINING THE MAXIMUM VALUES OF STRESS FIELDS IN THE SUPPORT-TYPED STRUCTURES

Keywords : *interactive software , mechanical testing, finite element method, mechanical tension*

ABSTRACT

The aim of the paper is to develop interactive software for monitoring the mechanical testing of the multifunctional materials. Thus, the conceptual, theoretical and methodological framework in IT for generating new instruments, technologies for specific applications in the area of mechanical testing. Taking into account the state of the art of knowledge in this area, the following specific objectives are proposed in the paper: developing techniques and methods for mechanical testings for advanced multifunctional materials; modelling the state of tension in tubes subjected to mechanical testings by using the method with finite element; designing programmes for a database containing the results obtained during the theoretical and experimental research; developing interactive programmes for monitoring the results obtained by simulating the state of mechanical tension in the studied materials.

Metalurgia International vol XIV 2009 pg.30

ION MELINTE, MIHAELA BALANESCU, MIRCEA HRITAC, ADRIAN DUMITRU TANTAU , IRENE SAMOILA, ADRIAN NECSULESCU THE SUBSTANTIATION OF THE METHODS FOR REDUCING THE CO₂ EMISSIONS IN IRON AND STEEL PROCESSES, BASED ON INTEGRATED APPROACH, BOTH TECHNOLOGICAL AND ENERGETIC

Keywords: *CO₂ emissions, primary methods, emissions reduction, mathematical model, integrated system*

ABSTRACT

This paper presents the way of the substantiation of the methods for reducing the CO₂ emissions in iron and steel processes, both technological, as well as combustion processes, in case of integrated, technological and energetic approach, using the calculus programs and patterns and simulations of the process input parameters (quantities of raw and basic materials, fuel feeds, carbon content in the basic materials and in the fuels).

There are approached primary methods for reducing the CO₂ emissions from the iron and steel processes, namely the modification of the process input parameters, or the modification of the actual process (technological or combustion), for improving its technologic or energetic efficiency.

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DIANA SILAGHI, IOANA IONEL, IOAN PĂDUREAN, IOSIF KAPOSTA, FLORIN SILAGHI, EPURE SORIN
RESEARCH CONCERNING THE PERFORMANCE OF THE TiNOX SELECTIVE COATINGS OF THE SOLAR COLLECTORS
Keywords: selective coatings, TiNOX, illumination, temperature, thermal agent, energy

ABSTRACT

The present paper presents the results of the experimental research achieved in reference to a solar thermal system for domestic water heating, installed in the city of Arad (lat. 46.19°N; long. 21.31°E) [7], [9]. Thus the behaviour of the TiNOX type selective coatings, that is part in the compenence of the vacuum tube solar collectors, working under the solar radiation action with a length wave in the visible domain, was studied ($\lambda=0.38-0.78 \mu\text{m}$), [1], [5].

The experimental results show the time variation of the monitorized parametres, in December 2006 – July 2008: illumination $E(\text{lx})$ and the temperature of the thermal agent used $T_2(^{\circ}\text{C})$ in the condenser-collector, in which the vacuum tubes are mounted.

The used measurement and monitorizing instruments acting on the experimental pilot exposed in real conditions, the Extech model 401036 luxmeter, the process installation calculator and the PC were proper used in order to demonstrate that, under given conditions, 1m^2 of absorbant made of selective TiNOX coatings, produces a thermal flux of 0.781 kW, by maintaining the recovered energy over one and half of a day of use at needed parameters (temperatures especially).

Metalurgia International vol XIV 2009 pg.41

AUREL GABA, ADRIAN CATANGIU, FLORINA VIOLETA ANGHELINA

NATURAL GAS CONSUMPTION OPTIMISATION BY SIMULATING HEATING FURNACES OPERATION

Keywords: furnace simulation, heat transfer, mathematical model, natural gas consumption reduction.

ABSTRACT:

The goals in heating furnace design are fuel consumption reducing and heat transfer parameter optimisation. This paper shows a way for decrease the ratio of natural gas from a combustibile bigas (mixture of natural gas and blast furnace gas) by preheating combustion air and fuel with low calorific value. The optimum heating parameters are computed by using a suitable mathematical model. Also the simulation of furnace operation has allowed determination of main design parameters for a new type of fuel and combustion air preheater.

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MARIUS ARGHIRESCU
RESEARCHES CONCERNING THE STEEL BAINITE STRUCTURES OBTAINED UNDER THE ACTION OF HIGH FREQUENCY INDUCTION CURRENTS

Keywords: solid state transformation, induction electric currents, pearlitic, bainitic, martensitic

ABSTRACT

By an inductor for superficial hardening with 8kHz HF currents, having three coils: one for austenitizing and two for quasi-isothermal hardening of the bar steel surface, realised by simultaneous cooling with water, was studied the influence of the induction currents on the allotropic transformation mechanism of the bainitic transformation. The obtained microstructures indicates that the action of HF currents within the bainitic transformation increases the driving force of allotropic transformation: $\gamma \rightarrow \alpha$ by a force of temperature gradient, bigger than those generated by a classical quenching after induction heating.

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ERMINA ȚAPU, RUXANDRA ȚAPU, BOGDAN MOCANU, ELENA DRĂGULĂNESCU
RESEARCHES ON MAXIMIZING THE GENERATED POWER OF A NANOSATELLITE SOLAR PANELS

Keywords: solar cells, nanosatellite, semiconductor, energy

ABSTRACT

In this paper we propose to evaluate different possibilities to optimize the energetic consume of nanosatellites with the main purpose of rising their life time. Our researches were focused in maximizing the power generated by the solar panels of a nanosatellite by using a new material

capable to profit of the entire surface of the solar spectrum and also by establishing optimal orbital trajectories.

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GHEORGHE V. LEPADATU
THE FISCAL - ACCOUNTANCY CORRELATION DURING THE GLOBALIZATION AGE. FEATURES SPECIFIC FOR ROMANIA – AS EUROPEAN UNION COUNTRY

Keywords: fiscal, accountancy, globalization, fiscal cost, fiscal strengthening.

ABSTRACT

The member countries of European Union have included in their competence list the elaboration of certain standards regarding the fiscal system. The fiscal-accountancy correlation may get shaped for the following period of time, firstly through regulations. From this point of view, it is well known that for the accountancy field, there already exists and it is functional an international regulated system. The international accountancy standards represent professional norms, compulsory and generally applicative, among all the countries that adopted them. In spite of all that the Fiscality remains, even during the conditions of the globalizations and local process, in the national area.

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ARGENTINA VELEA
CRITICAL RE-EVALUATION OF HEMINGWAY'S CAREER

Keywords: critical re-evaluation, interdisciplinary perspective, existentialism, determinism.

ABSTRACT

This essay means to probe into the present state of criticism in what concerns the representation of war in Hemingway's work by recording the evolution of critical approaches regarding Hemingway. To this end, we mean to show that Hemingway's scholarship throughout time is characterized by dynamism, given the cultural debate over the issue of war representation undertaken by critics.

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MARCEL GHITA
IMPLEMENTING THE INTERNAL CONTROL & FINANCIAL MANAGEMENT SYSTEM

Keywords: internal audit missions, assurance within the internal audit, counseling/consultancy within the internal audit, counseling activity's types and forms.

JEL Classification: H 11, H 83, P 11, P 21, P 26, P 35, P 43, P 51

ABSTRACT:

The implementation of internal audit function in Romania has imposed the reorganization of the internal control system that existed within public entities. Although, commonly it would have been the other wayaround, due to the European Union's pressures it was first implemented the internal audit function in the Romanian public sector.

Nowadays, we found ourselves in a process of organization and implementation for the financial control and management system within entities from the public sector.

The article presents the internal audit function's evolution and the present (actual) stage of implementation of internal control and management system, process that began in 2005, in the Romanian public sector.

Metalurgia International vol XIV 2009 pg.73

FLORIN BONCIU, GHEORGHE CARAIANI
TRANSPORTS AND SUSTAINABLE DEVELOPMENT IN THE CONTEXT OF THE PRESENT SYSTEM OF CRISES

Keywords: sustainable development, global crises, rethinking transport, environment impact of transport, new world order.

JEL Classification: F0, J91, O10

ABSTRACT

The paper focuses the analysis on the relation among globalization, sustainable development and transports. The consequences of transports development on environment and energy resources exhaustion are studied against the system of crises that characterizes the world economy. As the world has to design a more efficient and stable configuration, this requires more coordination of all decision makers and also a holistic approach to crises. The conclusion is that any sustainable solution has to imply a profound and structural change of the current transport system at global level.

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