


Materials

7. Comparing of optical properties and morphology of polyoxadiazoles with CF₃ groups

B. Hajduk, P. Jarka, J. Weszka (Poland),
M. Brumac (Romania), J. Jurusik, M. Chwastek,
D. Mańkowski (Poland)

15. The microstructure and mechanical properties of the alloy CuZn30 after recrystallision annealing

W. Ozgowicz, E. Kalinowska-Ozgowicz,
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Properties

25. Microstructure forming processes of the 26Mn-3Si-3Al-Nb-Ti steel during hot-working conditions

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33. Mechanical properties of ultra-fine grain titanium

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Analysis and modelling

41. Application of off-line error correction method software to reproduce random signals on servo-hydraulic testers

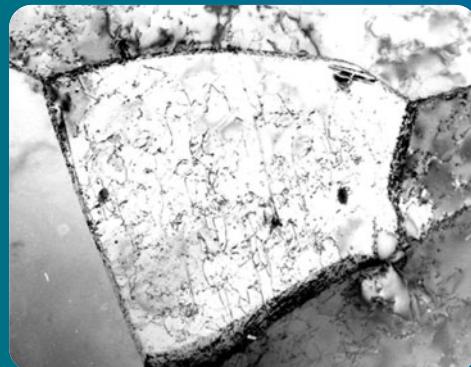
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50. Application of artificial neural networks in modelling of quenched and tempered structural steels mechanical properties

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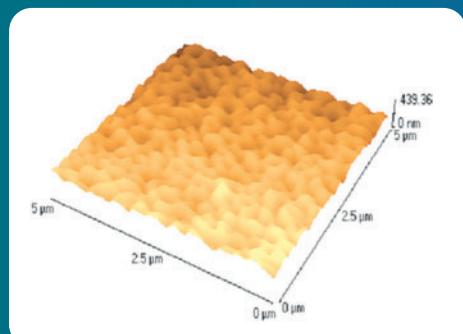
Selected materialographical photo

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The Properties section represented by M. Greger, M. Widomská and L. Kander on "Mechanical properties of ultra-fine grain titanium" on a page 33 describes the deformation behaviour of the commercial purity titanium during the ECAP method. Attention was paid particularly to reached mechanical properties of above mentioned material. Value of paper is mainly in observed findings that can be used in determination of process conditions at submicro or ultra-fine crystalline materials. Design of experiments rested in extrusion at temperature in range from room temperature up to 280°C. The way of approach was planned in investigation of imposed strain accumulation ability. Among used methods for determination of intended aims were tensile tests, TEM, SEM. Depending on imposed strain ($\epsilon = 2$ up to 8) it was found out that mechanical properties (namely tensile strength) have increased up to 960 MPa. Obtained findings may be used in process of preparing materials for medical application such as dental application where it is a very important factor of their sensitivity to strain.

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In the paper entitled "Comparing of optical properties and morphology of polyoxadiazoles with CF₃ groups" by B. Hajduk, P. Jarka, J. Weszka, M. Brumac, J. Jurusik, M. Chwastek and D. Mańkowski on a page 7 the optical properties of 4-(1,1,1,3,3-hexafluoro-2(-4(-3(4-(5-(4-m-tolyl)phenyl)-1,3,4-oxadiazol-2-yl)phenoxy)phenylcarbonyl)phenyl)propan-2-yl)-N-methylbenzamide (Oxad 6F-D) and 4-(1,1,1,3,3-hexafluoro-2(-4-(4-(5-(4-p-tolyl)phenyl)-1,3,4-oxadiazol-2-yl)phenoxy)carbonyl)phenyl)propan-2-yl)-N-methylbenzamide (Oxad 6F-E) is presented. The spinning rate V and solution concentration C influenced optical properties of Oxad 6F-D and Oxad 6F-E thin films. The goal of this paper is to show differences in properties of these polymers. The electrical and luminescent properties of Oxad 6F polymers will be carried out in the nearest time. The different properties of these polymers are caused by benzene position in the polymer chain, two aromatic rings are in meta-position in Oxad 6F-D and all benzene rings are in para-positions in Oxad 6F-E. Thin films of Oxad 6F-D and Oxad 6F-E are good potential material for applications in polymer optoelectronic devices.



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Authors: L.A. Dobrzański and W. Borek in the paper entitled "Microstructure forming processes of the 26Mn-3Si-3Al-Nb-Ti steel during hot-working conditions" on a page 25 discuss the influence of hot-working conditions on microstructure evolution of new-developed 26Mn-3Si-3Al-Nb-Ti high-manganese steel. To determine in details the microstructure evolution during industrial rolling, the hot-working schedule should take into account a real number of passes and higher strain rates. The obtained microstructure – hot-working relationships can be useful in the determination of power-force parameters of hot-rolling and to design a rolling schedule for high-manganese steel sheets with fine-grained austenitic structures. The investigated steel is characterised by high values of flow stresses from 250 to 430 MPa. Increase of flow stress along with decrease of compression temperature is accompanied by translation of ϵ_{\max} strain in the direction of higher deformation. Results of the multi-stage compression proved that applying the true strain 4x0.29 gives the possibility to refine the austenite microstructure as a result of dynamic recrystallisation. In case of applying the lower deformations 4x0.23 and 4x0.19, the process controlling work hardening is dynamic recovery and a deciding influence on a gradual microstructure refinement has statical recrystallisation.



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The Manufacturing and processing area is shown in the paper on "The efficiency of different machines for controlling of western corn rootworm adults" by D. Stajnko, M. Janzekovic, B. Mursec, P. Vindis and F. Cus on page 79. The appearance western corn rootworm (*Diabrotica virgifera virgifera* LeConte) in Slovenia brings new challenges to machines used for pesticide spraying of corn. The control of western corn rootworm is difficult due to the height of the corn crop in July-August. The current paper presents the exploitation characteristics of mistblower with cannon and field sprayer with high-mounted spraying boom and vertical tube extension with distributing nozzles on pesticide distribution over the corn plant. The ventilator of the mistblower spread the pesticide over the wider band of the field as the field sprayer, however the pesticide distribution measured as coefficient of variation did not fulfil the legislative requirements. By implementing the findings from our experiments a severe damage in corn yield caused by the western corn rootworm can be reduced significantly. On that way an effective way in production of corn can be contribute to farmers' economy.

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