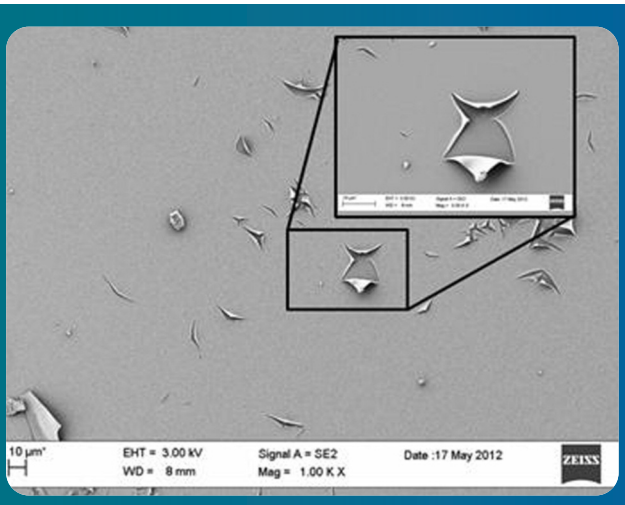
Materials

Properties



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The paper entitled "Sol gel TiO_2 antireflection coatings for silicon solar cells" by L.A. Dobrzański and M. Szindler on a **page 7** shows the changes in surface morphology and optical reflection of thin films of titanium dioxide. Thin films were prepared using sol gel spin coating method. Results and their analysis allow to conclude that the titanium isopropoxide concentration in solution and spin speed, which is an important factor in spin coating technology has a significant influence on surface morphology and optical reflection of thin films titanium dioxide. The paper presents some researches of titanium dioxide thin films deposited by sol gel spin coating method on monocrystalline silicon. Known sol gel titanium dioxide optical parameters and the possibility of obtaining a uniform thin films show that it can be good material for photovoltaic application.

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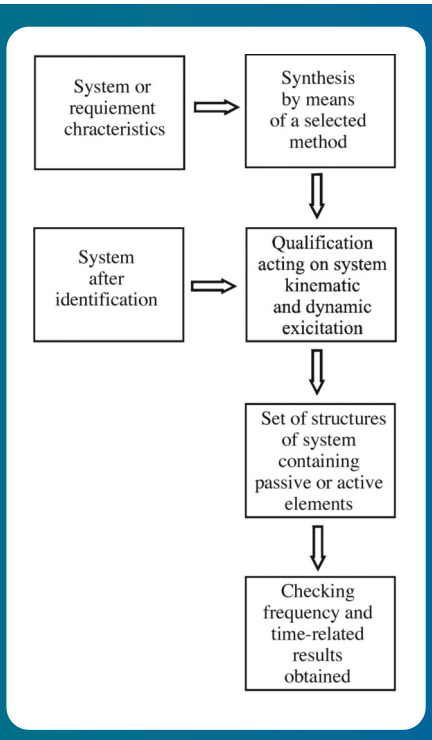
The paper written by A. Kurc-Lisiecka, W. Ozgowicz, W. Ratuszek and K. Chruściel on "Texture and structure evolution during cold rolling of austenitic stainless steel" on a **page 22** analyzes the influence of plastic deformation in cold working process on the texture and structure of X5CrNi18-8 austenitic stainless steel. The main methods used for these researches were metallographic observations, magnetic investigations as well as X-ray examinations, which were applied for phase analysis and the texture measurements of the rolled strip. The deformation texture development in the case of X5CrNi18-8 steel was complex, because during cold rolling three processes were proceeded simultaneously, i.e.: plastic deformation of the austenitic γ-phase, phase transformation $\gamma \rightarrow \alpha'$ as well as deformation of the formed α'-martensite. Thus, the resultant deformation texture of the investigated steel is described by the components from the textures of both phases- γ and α'. The character of the texture evolution was analyzed during increasing of the plastic deformation, considering the variations of different crystallographic orientations in both phases. The α-phase volume fraction was determined after each rolling pass of strip. This allowed to determine the interdependence between the evolution of texture and phase composition of the investigated steel. The analysis of the obtained results permits to state that the degree of deformation has a significant influence on the structure and texture of the investigated steels.



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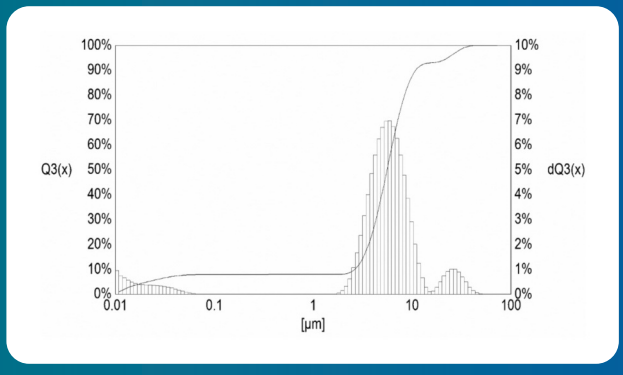
In the paper entitled "Application of mechanical and electrical elements in reduction of vibration" by K. Białas on a **page 31** the methods of reduction of the vibration of mechanical systems by means of passive and active elements as well as examples of implementation of active reduction of vibration by means of electrical elements and mechanical elements in the form of kinematic excitation were determined. This work also describes a structural and parametric synthesis, which can be defined as the design of systems meeting specific requirements. These requirements refer to the frequency values of the systems' vibration. The examples of implementation of active subsystems presented in this work point out to the fact that one can use mechanical elements as well as electrical elements to reduce mechanical vibration. By applying such elements it is possible to obtain mechanical energy necessary for the active reduction of vibration. The results representing this work extend the tasks of synthesis to other spheres of science. The practical realization of the reverse task of dynamics introduced in this work can find uses in designing machines with active and passive elements with the required frequency spectrum. The presented approach i.e. a non-classical synthetic method applied in designing mechanical systems, one (as early as at the design and construction stage) may verify future systems.



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The Manufacturing and processing area is shown in the paper on "High-energy milling as a method for obtaining tetragonal form of PbO" M. Staszewski, Z. Myczkowski, K. Bilewska, R. Sosiński, M. Lis, M. Czepelak and D. Kołacz on a **page 39**. The aim of this work was to investigate usefulness of high-energy milling, using electromagnetic mill, as a method for obtaining tetragonal (red) form of PbO, competitive with standard methods. Optimum conditions of milling and milling limitations were determined. Suggestions regarding optimization of mill construction were presented. Utilization of electromagnetic mills was found to be suitable for milling of PbO because of speed and price competitiveness of the method and ability to supply, in certain conditions, good product. Obtained product may be used for manufacturing of minium. Quantitative X-ray diffraction and analysis of granulation of mill products were made. The characteristics and rate of structural transitions of studied powder depending on milling conditions were defined.

Analysis and modelling

Manufacturing and processing