

Contents

Characterization and properties

Peculiarities of the compatible behavior of structural components in nitrate systems of cesium, strontium and neodymium precursors: some applied aspects of their use <i>O.G. Dryuchko, V.V. Soloviev, O.V. Shefer, N.V. Bunyakina, M.V. Moskalenko, N.V. Yermilova, V.M. Galay, B.R. Boriak</i>	5
Crystal and band energy structure of Nd _{1.5} Y(Tb) _{1.5} Ga _{1.67} S ₇ sulfides <i>O.V. Marchuk, N.M. Blashko, M.Ya. Rudysh, O.A. Yakymchuk</i>	15
Prediction of spin-polarization characteristics of Al@Si -doped single-walled (6,0) SiC nanotubes <i>Vusala Nabi Jafarova, A.A. Hadiyeva, V.K. Sarijanova, Sh.R.Mammadova, A.K. Sijo, Merin Sabi</i>	24
Explorations of the impact of strontium substitution on selected physical characteristics of the HgBa _{1.6-x} Sr _x La _{0.4} Ca ₂ Cu ₃ O _{8+δ} superconductor <i>Taghreed Baqer Alwan, Zainab J. Neamah, Laheeb A. Mohammed, Mudatheer M. Al-Slivani, Kareem A. Jasim</i>	33
Determination of Young's modulus of metal-based composites with cubic lattice <i>V.V. Tytarenko</i>	41
Novel Na ⁺ , Mg ²⁺ (Cu ²⁺), CO ₃ ²⁻ /(BO ₃ ³⁻ , BO ₂ ⁻)-substituted hydroxyapatites/CuFe ₂ O ₄ composites: synthesis and investigation <i>N.Yu. Strutynska, Ye.O. Komashchenko, I.I. Grynyuk, O.V. Livitska, O.M. Vasyliuk</i>	46
Influence of parameters of discretely textured oil-retaining contact surfaces on the fretting resistance of tribosystems <i>M. V. Kindrachuk, V. Ye. Marchuk, V. V. Kharchenko, M. S. Stechyshyn, A. O. Yurchuk, V.V. Marchuk, M.A. Hlovyn, I.V. Kostetskyi</i>	54
Surface modification of the cobalt base super alloy using titanium oxide as thermal barrier and study of its efficiency in resisting oxidation and hot corrosion <i>Kheder A. Salah, Mazin A. Abed, Mahmood A. Hamood</i>	61
Adsorption and corrosion prevention efficacy of <i>Hyppomarathrum libanotis</i> butanolic extract on API 5L Gr-B steel in acid environment <i>Kaouther Soudani, Merzoug Benhmed, Abdelkader Hafdallah, Hocine Laouar, Abdelkrim Gouasmia</i>	70
Improving the mechanical and thermal properties of unsaturated polyester resin by adding aluminum oxide Al ₂ O ₃ <i>Kawther Mahfoudh, Ebtehag Zeki Sulyman</i>	83
Preparation and properties of graphene oxide modified concrete <i>Hai Cao, Tingting Wang, Jing Xu</i>	92

Modeling and simulation

Temperature dependent thermo-mechanical properties of 3C and 6H silicon carbide from atomistic simulations on large-scale systems with DFT-derived machine learning interatomic potential
Oleksandr Parfionov, Oleksandr Vasiliev98

Technology

Hydrogen-free nitriding of carbon steels and gray cast irons pre-hydrogenated in a glow discharge
D.V. Zdorenko, M.S. Stechyshyn, A.V. Martynyuk, N.M. Stechyshyna, Yu.V. Tsybalyuk 106

On refining by distillation or crystallization in processes with flow of refined substance
A.I. Kravchenko 112

Optimization of thermal diffusion technology of Ni–Al–Si–Cr–La coatings for the protection of heat-resistant nickel alloys
D.B. Hlushkova, V.M. Volchuk 115

Devices and methods

Advances in organic field-effect transistors with polymeric gate dielectrics: A short review
K. R. Rajesh, C. S. Menon, C. R. Indulal 121

3D printing of heterogeneous detector elements for registering high-energy particles
M.L. Sibilyev, O.V. Kolesnikov, V.O. Novgorodtsev, T.G. Sibilieva 127

Personalia

Academician of the National Academy of Sciences of Ukraine Borys Grynyov turns 70 . 135