

*С Новым 2011 годом!  
Happy New Year 2011!*

## В HOMEPЕ:

## IN THE ISSUE:

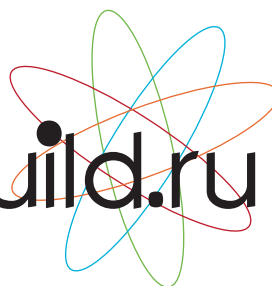
- **«Простор за пределом»,** или как нанотехнологии могут изменить мир бетона
- **«There's plenty of room at the bottom»,** or how nanotechnologies can change the world of concrete
- **Результаты исследований** по получению силикатных материалов и изделий с использованием наноструктурированных модификаторов и созданию защитного слоя на их поверхности
- **The results of the researches** aimed at obtaining silicate materials and products using nanostructured modifiers and creating protective layer on their surface
- **Интернет-журнал «Нанотехнологии в строительстве»** награжден знаком «Инженерная доблесть» и Дипломом БГТУ им. В.Г. Шухова
- **Internet Journal «Nanotechnologies In Construction»** has been awarded with the sign «Engineering Valance» and Diploma of Shukhov BGTU
- **Результаты исследований** влияния металл-углеродных нанокompозитов на увеличение прочностных свойств бетонных и пенобетонных композитов: сверхмалые количества нанокompозита приводят к повышению прочности, зависящему от их состава
- **The results of the researches** studying influence of metal-carbon nanocomposites on the increasing strength of concrete and foam concrete composites: the minute quantities of nanocomposite lead to increase of the strength depending on their composition.

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## Nanotechnologies in construction: a scientific Internet-journal

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**NANOTECHNOLOGIES IN CONSTRUCTION: A SCIENTIFIC INTERNET-JOURNAL**
**NANOTEHNOLOGII V STROITEL'STVE: NAUCHNYJ INTERNET-ZHURNAL**
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## THE DEVELOPMENT OF NANOTECHNOLOGIES – STRATEGIC TASK OF THE COUNTRY'S INNOVATION DEVELOPMENT

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**Creative activity of the country's engineer corps is an important factor for its rapid social and economic development, increase of competitive ability on the world market, formation of positive image of Russia as a high technological state with developed economy. Construction needs scientific and technical engineers, first of all, in order to develop nanotechnologies, innovation building technologies aimed at creating comfortable and ecologically friendly building materials and architectural forms of new generation.**

**Key-words:** Congress of Russian Engineers, All-Russian Scientific and Technical Conference, Higher Engineering Council, modernization of economy, nanotechnologies in construction and housing and communal services.

УДК 691.32

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## «THERE'S PLENTY OF ROOM AT THE BOTTOM», OR HOW NANOTECHNOLOGIES CAN CHANGE THE WORLD OF CONCRETE Part 1

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It's quite impossible to imagine modern construction without concrete. Today the world volume of concrete being produced is more than 4 milliard of m<sup>3</sup> per year. Concrete is used under different operational conditions, it is ecologically friendly material and it has unlimited source of raw materials and comparatively low cost.

One should also mention its high architectural and construction expression, comparative simplicity and accessibility of technology, opportunity to use widely local raw materials and anthropogenic wastes utilization in its production, low energy intensity, ecological safety and operational reliability. Undoubtedly it is the reason why concrete will remain the main building material in the foreseeable future.

**Key-words:** application of nanotechnologies in construction, nanomodifiers in concrete compositions, nanostructured modifiers, non-clinker binders, hyperplasticizers, mechanoactivation, nanosize.

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УДК 669.017.16:539.213

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## THE INFLUENCE OF CARBON METAL-CONTAINING NANOSTRUCTURES ON THE STRENGTH OF CONCRETE COMPOSITES

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The paper represents the results of the researches studying influence of metal-carbon nanocomposites on the increasing strength of concrete and foam concrete composites. The super small quantities of nanocomposites, depending on their composition, result in rising concrete strength.

**Key-words:** metal-carbon nanocomposites, carbon metal-containing nanostructures, dense concrete, foam concrete, super small quantities.

**Dear colleagues!**

**The reference to this paper has the following citation format:**

*Akhmetshina L.F., Kodolov V.I., Tereshkin I.P., Korotin A.I.* The influence of carbon metal-containing nanostructures on the strength of concrete composites. *Nanotechnologies in Construction: A Scientific Internet-Journal*, Moscow, CNT «NanoStroitelstvo». 2010, Vol. 2, no. 6, pp. 35–46. Available at: [http://www.nanobuild.ru/magazine/nb/Nanobuild\\_6\\_2010.pdf](http://www.nanobuild.ru/magazine/nb/Nanobuild_6_2010.pdf) (Accessed \_\_\_\_\_). (In Russian).

### **References:**

1. *Korotkih D.N., Artamonova O.V., Chernyshov E.M.* About requirements to nanomodifying additives for high-strength cement concretes // «Nanotechnologies in Construction: A Scientific Internet-Journal». 2009. № 2. P. 42–49. URL: [http // www.nanobuild.ru](http://www.nanobuild.ru)
2. High quality concrete. Analysis of opportunities and practical experience of application of nanotechnological methods / A.N. Ponomarev // *Civil engineering journal*, 2009, № 6. P. 25–31.
3. Technology of polymeric and inorganic composite materials micromodification / A.N. Ponomarev // *Science and high technology*, 2003. P. 99–101.
4. Modification of construction composites by carbon nanomaterials / A.G. Tkachev, Z.A. Mihaleva, M.N. Ladohina, E.A. Zhutova // *International scientific journal for alternative energy and ecology*, 2007, № 9 (53). P. 56–59.
5. Patent 2393110. Russia. Method of obtaining carbon metal-containing nanostructures / V.I. Kodolov, Yu.M. Vasilchenko, L.F. Akhmetshina, D.A. Shklyayeva, V.V. Trineeva, A.G. Sharipova, E.G. Volkova, A.L. Ulyanov, O.A. Kovyazina; declared 17.10.2008, published 27.06.10.
6. Patent 2337062. Russia. Method of producing carbon nanostructures from organic compound and metal-containing substances/ V.I. Kodolov, V.V. Kodolova (Trineeva), N.V. Semakina, G.I. Yakovlev, E.G. Volkova and others.; declared 28.08.2006, published 27.10.08.
7. Structuring of cement matrix of fine grain concrete by carbon nanodispersed systems / A.A. Lushnikova, A.V. Pislegina, V.A. Krutikov, G.Iv. Yakovlev // *Proceedings of International Scientific and Technical Student's Conference*, Moscow, 15–19 of march 2010. P. 317–321.
8. Sol-gel as a conception of cement composites nanotechnology / P.G. Komohov // *Building materials*, 2006., № 9. P. 14–15.
9. Nanotechnology – to concrete production / T. Reut // «*Building newspaper*», 2007, № 49.
10. Characteristics of using fulleroid type carbon nanoparticles in cement composites / Yu.V. Puharenko, V.D. Staroverov // *Dry building mixtures*, 2010, № 1. P. 41.

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## SILICATE MATERIALS WITH NANOMODIFICATOR

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**Answering the question posed at the II International theoretical and practical online-conference «Application Of Nanotechnologies In Construction Industry» concerning application of nanomodifiers in concrete compositions, ceramics and silicate materials, the article presents results of researches on production of silicate materials and wares using nanostructured modifiers and on creation of protective layer on the surface of silicate materials with the help of low-temperature plasma.**

**Key-words:** application of nanotechnologies in construction, nanomodifiers in concrete compositions, nanostructured modifiers, clinkerless binding agents, hyperplasticizers, mechanoactivation, nanosize.

**Dear colleagues!**

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### ***References:***

1. *Urkhanova L.A.* Regulation of physical and chemical properties of composite materials by mechanochemical activation // Building materials. 2007. 11. P. 42–44.
2. *Bazhenov Y.M.* Use of nanosystems in construction material science // Vestnik MGSU. 2009. № 3. P. 10–13.
3. *Buyantuev S.L.* Production of finishing materials based on local materials by using plasma treatment // Vestnik BGU. Series 9: Physics and Engineering. Issue 1. Ulan-Ude, 2001. P. 74–79.

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## **INCREASING OF THE LEVEL AND STABILITY OF HOT- AND COLD-ROLLED METAL CHARACTERISTICS USING PURPOSEFUL NANOSTRUCTURING OF HIGH-STRENGTH LOW-ALLOY ELECTRIC STEELS**

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**Tendency of increasing the whole complex of steel properties (for example, strength, plasticity, stampability, corrosive resistance) which are as a rule difficult to mix to a limit level causes the necessity to apply fundamentally new methods for obtaining proper structure, high technological, mechanical, physical and chemical characteristics of metal. Nanostructuring plays the key role in this process. Nanostructuring is performed by the regulation of non-metals excessive phases' isolation and/or strengthening structural constituents which formation should occur under strictly regulated conditions at the certain stages of steel production.**

**Key-words:** steel nanostructuring, cementitious steel constituent, complex of properties, complex of characteristics, stability of metal products properties, modern metallurgical technologies.

**Dear colleagues!**

**The reference to this paper has the following citation format:**

*Shakhpazov E.Kh., Zaitsev A.I., Rodionova I.G.* Increasing of the level and stability of hot-and cold-rolled metal characteristics using purposeful nanostructuring of high-strength low-alloy electric steels. *Nanotechnologies in Construction: A Scientific Internet-Journal, Moscow, CNT «NanoStroitelstvo»*. 2010, Vol. 2, no. 6, pp. 68–86. Available at: [http://www.nanobuild.ru/magazine/nb/Nanobuild\\_6\\_2010.pdf](http://www.nanobuild.ru/magazine/nb/Nanobuild_6_2010.pdf) (Accessed \_\_\_\_\_). (In Russian).

### References:

1. *Shakhpazov E.H., Zaitsev A.I., Rodionova I.G.* Modern Problems of Metallurgy and Material Science of Steel // *Metallurg*. 2009. № 4. P. 25–31.
2. *Shakhpazov E.H., Zaitsev A.I., Shaposhnikov N.G.* et al. Mass production of high quality steels with implementation of nanotechnologies, based on the controlling nanosized precipitates of non-metallic excess phases // *The problem of black metallurgy and science of materials*. 2008. № 4. P. 112–122.
3. *Matrosov Y.I., Litvinenko D.A., Golovanenko S.A.* Steel for gas pipelines. Moscow: Metallurgy. 1989. 289 p.
4. *Popov V.V., Shaposhnikov R.G.* The principles of calculating the solubility of complex carbonitrides in steels. – *ZhFKh*. 1988. № 5. P. 1386–1387.
5. *Rudy E.* Boundary Phase Stability and Critical Phenomena in Higher Order Solid Solution Systems // *J. Less-Common Met.* 1973. V. 33. P. 43–70.
6. *Inoue K., Ishikawa N., Ohnuma I.* et al. Calculation of Phase Equilibria between Austenite and (Nb, Ti, V) (C, N) in Microalloyed Steels // *ISIJ Int.* 2001. V. 41. № 2. P. 175–182.
7. *Shakhpazov E.Kh., Zaitsev A.I., Rodionova I.G.* Production engineering of bulk high quality steels based on controlling nanosized precipitations of nonmetallic excessive phases (inclusions) // *The 10<sup>th</sup> China-Russia Symposium on Advanced Materials and Technologies*. – Jiaxin, China. Oct. 20–24. 2009. *Rare Metals*. 2009. V. 28. Spec. Issue. P. 74–77.
8. *Shaposhnikov N.G., Mogutnov B.M., Polonskaya S.M.* et al. Thermodynamic modeling as a tool for improving the technology of heating ingots of steel 12X18H10T for rolling. – *Science of Materials*. 2004. № 11. P. 2–9.
9. *Rodionova I.G., Shaposhnikov N.G., Endel N.I.* et al. Conditions for the formation of the nitride and sulfide phases in steels for deep drawing. II. Manganese sulfide // *The Problem of Black Metallurgy and Science of Materials*. 2008. № 4. P. 52–58.
10. *Shakhpazov E.H., Gordienko A.I., Zaitsev A.I.* et al. Increase of the level and stability of mechanical and other service characteristics of electric steels by controlling the processes of allocation of excess non-metallic phases // *Metallurg*. 2009. № 9. P. 40–46.
11. *Shakhpazov E.H., Zaitsev A.I., Rodionova I.G.* Modern trends of metallurgical technology development and aspects of improving the properties and reliability of metal production. The problem of non-metallic inclusions in steel // *The Problem of Black Metallurgy and Science of Materials*. 2009. № 3. P. 11–20.
12. *Rodionova I.G., Baklanov O.N., Zaitsev A.I.* et al. Research of factors controlling the corrosion resistance of electric steels // *The Problem of Black Metallurgy and Science of Materials*. 2010. № 2. P. 45–55.

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BELOMYTSEVA Elena Dmitrievna, Managing Editor of Internet-Journal  
«Nanotechnologies in Construction»

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## NANOTECHNOLOGIES IN CONSTRUCTION – ON THE THRESHOLD OF NEW REALITY

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On 1–3 November, 2010, Moscow saw the III International Forum on Nanotechnologies RUSNANOTECH 2010 which was held in Expocenter. In addition to eventful scientific, technological and business programs and exhibition the program of modern art «High-tech as a premonition» was presented on the Forum. Nearly 7200 persons took part in it within 3 days. You may find more information about III International Forum on Nanotechnologies RUSNANOTECH 2010 on the web site <http://www.rusnanoforum.ru>.

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IN THE WORLD OF THE BOOKS

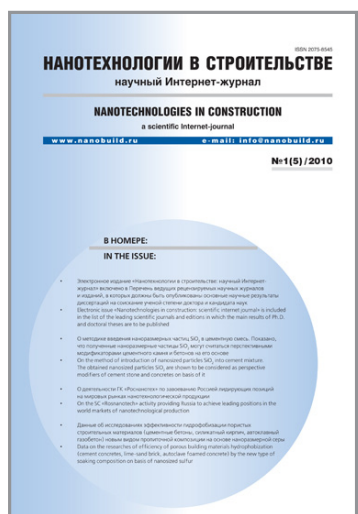
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## SCIENTIFIC AND TECHNICAL LITERATURE. NANOMATERIALS AND NANOTECHNOLOGIES

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**Some information on the books proposed by the limited company «Techinform» in the sphere of nanomaterials and nanotechnologies is given.**

**Key-words:** nanomaterials, nanoworld, nano- and microcrystalline materials, nanotechnologies, nanoobjects, nanotubes, nanoparticles, nanoshaping, nanostructures.



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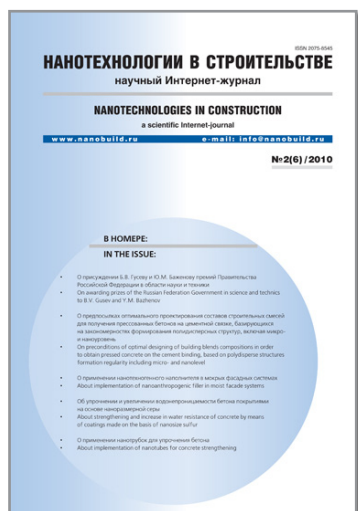
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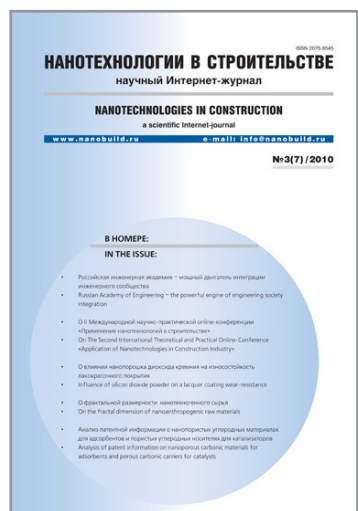
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