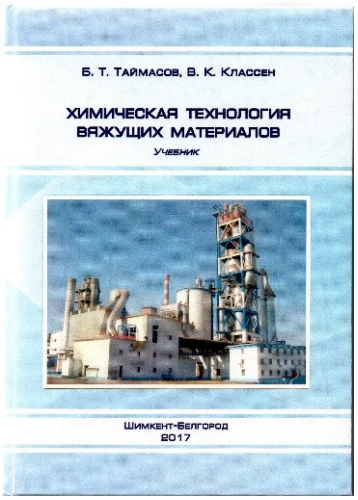
## НОВЫЕ ИЗДАНИЯ




Б.Т. Таймасов Химическая технология вяжущих материалов: учебник / **Б.Т. Таймасов, В.К. Классен.**- 2-е изд.доп. – Бедгород: Изд-во БГТУ, 2017. – 448 с. ISBN 978-5-361-00521-5

В учебнике рассмотрены технологические процессы производства портландцемента, свойства сырьевых материалов, нетрадиционного сырья и добавок, способы дробления и помола сырьевых материалов и цемента; описаны современные методы усреднения, корректировки и расчета сырьевых смесей, процессы обжига клинкера во вращающихся печах сухого способа, устройство и работа дробилок-сушилок, циклонных теплообменников, декарбонизаторов и холодильников, способы повышения производительности печей и мельниц, снижения энергоемкости и интенсификации процесса обжига; изложены особенности гидратации и твердения портландцемента; освещены вопросы разрушения бетона и цементного камня под воздействием физической и химической коррозии; уделено внимание специальным видам цемента.

Учебник предназначен для студентов направлений подготовки бакалавров 18.03.01 – Химическая технология, 18.03.02 – Энерго- и ресурсосберегающие процессы в химической технологии, нефтехимии и биотехнологии.

## ABSTRACTS OF PAPERS PUBLISHED IN ISSUE

### Samchenko S.V. The role of processes in the synthesis of silicate compounds in the chemistry of cement

*Samchenko S.V.* Moscow State University of Civil Engineering (MGSU) National Research University

The transformation of raw mixtures into finished products in the chemical technology of silicates occurs with high-temperature processing of raw materials and is accompanied by complex chemical and physicochemical processes, such as solid-phase reactions and sintering processes, processes of crystallization and recrystallization of melts, solutions, etc. The importance of studying thermodynamics, mechanisms and kinetics of complex chemical and physico-chemical processes and the relevance of the theoretical study of the processes underlying the production of silicate materials and products of various technical purposes are reported. The principal possibility of controlling such processes during the burning of cement clinker, in the molding of articles of certain sizes and shapes from ceramic masses and during the cooking of glass, and also application of technological factors, allowing to influence their course are shown.

***Keywords:*** solid-phase reactions, sintering processes, thermodynamics, silicate formation, synthesis

### Sarkisov Y.S., Kozlova V.K., Bozhok E.V., Malova E.Y., Manoha A.M. The influence of carbonate additives on shrinkage deformations of cement stone

*Sarkisov Y.S.* Tomsk State University of Architecture and Building
*Kozlova V.K., Bozhok E.V., Manoha A.M.* Polzunov Altai State Technical University
Malova E.Y. AO «Iskitimtcement»

The authors give a full analysis of the causes of shrinkage deformations of cement stone in concrete. It is shown that the total amount of shrinkage deformations is composed of moisture and carbonation shrinkage, which is the result of carbon dioxide corrosion of cement stone. A method of forced carbonization is proposed to determine the value of carbonization shrinkage, it is shown that in the presence of carbonate additives Portland cement decreases the scale of carbonization shrinkage of cement stone. According to the authors, the cause of carbonation shrinkage during the service of cement stone are chemical reactions occurring during carbon dioxide corrosion and accompanied by the transfer of part of the chemically bound water to the free state.

***Keywords:*** shrinkage deformation, carbonization shrinkage, carbon dioxide corrosion, carbonate additives, Portland cement, durability.

### Zaharov A.I., Bezmenov A.I., Andreev D.V. Digital technologies in the production of ceramics

*Zaharov A.I., Bezmenov A.I., Andreev D.V.* Dmitry Mendeleev University of Chemical Technology of Russia

The article describes the characteristics of various types of digital technologies, including additive ones used in the production of ceramics. The classification of ceramic products according to the types and methods of molding is given. The prospects of using the described technologies are shown.

***Keywords:*** ceramics, digital technologies, additive technologies, digital printing

**Zaw Ye Maw Oo. Production of porous and highly porous ceramics: classification, change of grain composition, sol-gel technology, fiber ceramics, duplication of polymer matrix. Part I.**

*Zaw Ye Maw Oo.* Dmitry Mendeleev University of Chemical Technology of Russia

The classification of methods for obtaining porous and highly porous ceramics and methods for obtaining it by changing the grain composition, using sol-gel methods, using inorganic fibers, duplicating the polymer matrix from polyurethane foam are given. Porous and highly porous ceramics are used for various applications, including at high temperatures and in corrosive environments: for thermal insulation, sound insulation, various filters and catalyst carriers.

***Keywords:*** ceramics, porosity, cellular materials, strength, granular powders, sol-gel, fibers, polyurethane foam

**Niyazbekova R.K., Shansharova L.S., Krivoborodov Y.R. Research of the properties of composite materials based on cements containing sludge of aluminous production**

*Niyazbekova R.K., Shansharova L.S.* S.Seifullin Kazakh Agrotechnical University, Astana, Republic of Kazakhstan
*Krivoborodov Y.R.*, Dmitry Mendeleev University of Chemical Technology of Russia

The aim of the article is to consider the processes of hardening cement compositions with additives in compositions based on aluminate cements containing micro- and nanodispersions of red mud. The use of alumina slurry will allow expanding the range of concretes, practically not changing the existing technologies for the production of materials, and will also contribute to ecological improvement of the environment through the Disposal of harmful substances contained in technogenic products. Based on scientific research, it can be concluded that the red mud of individual plants increases the mechanical strength of concrete

***Keywords:*** aluminate cements, red mud, waste products, strength of cement compositions.

**Svatovskaya L.B., Kabanov A.A. Geoecochemical parameter of soil detoxication with calcium silicates and hydrosilicates**

*Svatovskaya L.B., Kabanov A.A.* Emperor Alexander I St. Petersburg State Transport University

The paper presents parameter for geoecochemical effective of mineral geoantidotes, MGa for soil detoxication against heavy metal ions .MGa have been used calcium silicates and hydrosilicates .Parameter is connected with capacity absorption and tolerable consentration,TC. Method of parameter usage is suggested.

***Keywords:*** parameter, geoecochemical, detoxication, method, effective, silicates, calcium