

euro-eco
hannover2013

Internationaler
Kongress &
Fachmesse

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Ökologische, Technologische und Rechtliche
Aspekte der Lebensversorgung

Programm Abstracts

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28.— 29. NOVEMBER 2013

DAS INTERNATIONALE SYMPOSIUM

“ÖKOLOGISCHE, TECHNOLOGISCHE UND RECHTLICHE ASPEKTE DER LEBENSVERSORGUNG”

Programm Abstracts

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Europäische Wissenschaftliche Gesellschaft e.V Hannover

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ISBN 978-3-00-032886-2

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SYNTHESIS OF CORDIERITE CERAMICS WITH HIERARCHICAL POROUS STRUCTURE BY SOL-GEL TECHNIQUE

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It is well known that such porosity characteristics as total amount of pores, open/closed porosity ratio, average pore size and distribution, and pore shape play important role in determining the potential applications of ceramic materials. As example, the microporous systems can be effectively used in catalytic-adsorptive purification of both gaseous and liquid streams, while macroporous ones are useful for filter cleaning processes, biomedical applications and thermal insulation. The combined morphology and pore structure of monolith matrixes allows one to extend and to widen significantly the range of its applications. When porous materials are required to perform multiple functions, hierarchical porosity constitutes a means to accomplish these complex tasks. Thus, the micro-macro porosity can greatly improve the characteristics of porous materials in the cases when both catalytic activity and high mechanical strength are required.

This work was focused on the development of synthetic routes to produce the cordierite ceramics with hierarchical porous structure. The macroporous cordierite ceramics was prepared by using the natural raw materials of Komi Republic (kaolin, bauxite, talc, alumina, and silica sand). This approach allowed us to reduce the cost of the products. The micro/mesoporous layers were synthesized by means of sol-gel technologies when the organic and inorganic compounds were used as precursors.

This work was partially supported by the Ural Branch of the Russian Academy of Sciences (integration project No. 12-C-3-1019) and the Russian Foundation for Basic Research (grant No. 13-08-90727).

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DEVELOPMENT PROBLEMS OF ENVIRONMENTALLY SENSITIVE RUSSIAN REGION, THE REPUBLIC OF ALTAI

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The Republic of Altai is located in the south of Western Siberia, and from the ecological point, it is a part of the Altai-Sayan ecoregion, which is indicative of a high

level of biodiversity. The policy papers of the Republic demonstrate hard lobbying of its ecological status and the tourist-recreational way of development with a focus on eco-tourism.

Focus on eco-tourism is completely unbiased, nevertheless one should keep in mind three things. First, it is national- ethnic structure of the population and the need to maintain its life-support systems considering the needs and mentality of indigenous people. Note, that in some places the traditional forms of ethnic nature management among the Altaian, Kazakh and Russian (Old Believers) prevail, while in the central part of the Republic the urbanized type of settlement is cultivated.

Second, when creating the regional development strategy, tourism should be considered as a type of economic activity with its acceptable impact on the environment. It must be profitable for the reproduction of the means of production. Also it should combine high preservation of recreational resources and fragile mountain landscapes with the provision of comfortable infrastructure services to the tourists. The hotels and campsites must be harmoniously fit in with the environment.

Third, what is meant by eco-tourism, and which of the existing models best suits to the region: the European model of nature -oriented tourism based on the programs of environmental education or the Australian one representing the “immersion into the wild”?

Both models are quite applicable in the Republic of Altai. In our opinion, it is reasonable to develop a ‘combined’ model of eco-tourism including the features of both models with elements of “volunteerism” when the tourists gain new knowledge and aesthetic experience and at the same time bring their own contribution to the restoration and preservation of Altai beautiful landscapes. The implementation of the concept on the Establishment of the Transboundary Biosphere Reserve “Altai” at the intersection of four countries (China, Kazakhstan, Mongolia and Russia) supported by the GEF financially could become an excellent example of such a development.

However, to implement the proposed model of eco-tourism in the Republic, it is necessary to introduce a large number of innovative solutions allowing the creation of comfortable environment for both local residents and potential tourists. Particularly, it is the best international practice in energy supply and consumption, including the alternative energy sources, recycling of solid domestic wastes, environmentally oriented spatial planning and landscape design in view of social and economic interests of local communities.