
Copyright © Organizing Committee of XX Mendeleev Congress
on General and Applied Chemistry, 2016. All rights reserved

XX Mendeleev Congress on general and applied chemistry.

Five-volumes book. Vol. 2a : abstracts. – Ekaterinburg : Ural Branch of the Russian
Academy of Sciences, 2016. – 464 p.

ISBN 978-5-7691-2451-8

Vol. 2a. Chemistry and technology of materials and nanomaterials

Volume 2a includes abstracts of plenary lectures of Congress, keynote lectures, invited reports, oral and
poster presentations of the section: «Chemistry and technology of materials and nanomaterials».

FORMATION POROUS CERAMICS STRUCTURE BURNING ADDITION CRYSTALLIZATION IN THE SLURRY

Kamyshnaya K.S., Khabas T.A.

*National Research Tomsk Polytechnic University, prospect Lenina, 30, Tomsk, 634050,
Russia, e-mail: ksenia@tpu.ru*

Porous ceramics is wide used as catalysts, ceramic membranes, porous electrodes, bio-materials etc. There are different methods of obtaining porous ceramics, but impossibility to control of pore morphology is the main disadvantage of these methods. Thus researches of porous material obtaining with possibility of pore space morphology control are advanced. In recent years, freeze-casting method is studied for obtaining of new types of porous materials very active¹.

In this study the freeze-casting method has been used to obtain porous ceramics with defined pore morphology with using of micron zirconia powder. Saturated solution of urea was used as crystal-forming additive. Three different forms (plastic, metal and polyurethane form with a metal bottom) were researched for optimized material selection of form for casting and observation of crystal growth in the slurry of urea. For achievement required temperature gradient different variants of form cooling with «ZrO₂-urea» slurry were choice: 1) sudden temperature change from 80 °C to -5°C, 2) a gradual, slow temperature change from 80 °C to 23°C.

As a result it was found that in the received cast urea crystals have a large order but small size of crystals because of crystals growth high rate. Porosity of sintering samples molded with slow cooling suspension is a bigger then samples porosity molded with sudden cooling suspension (62% and 57% respectively). Samples prepared in metal and polyethylene forms have a distinct pore structure in the forms of needles at the same conditions of formation and cooling.

References

1. Qian, L. and Zhang, H. J. Chem. Technol. Biotechnol., 2001, 86. 172–184.

Gusev V.Yu.	199	Ivanov V.K.	159, 166, 167, 189, 214, 215, 216, 257, 273, 372
H		Ivanov V.V.	315
Haldeeva A.R.	111	Ivicheva S.N.	381
Hodyashev N.B.	262	Ivleva L.I.	217
Hosseini M.W.	17	J	
Hudyakova T.E.	294	Jiráťová K.	301
Hwu J.R.	18	K	
I		Kablov E.N.	19
Ibragimova R.R.	239, 412	Kadyrova N.I.	205
Ilev V.M.	43, 263, 362, 363	Kadyrova Yu.M.	289
Ignatenko V.Ya.	264, 323	Kaimieva O.S.	276
Ignatova M.M.	309	Kalenskii A.V.	277
Il'icheva A.A.	97	Kaletin A.Yu.	278
Ilinykh N.V.	223	Kaletina Yu.V.	278
Il'ves V.G.	134	Kalinina E.G.	279, 280
Ilyasova R.R.	398	Kal'nyi D.B.	307, 308
Il'yasov S.G.	62	Kalyuzhny D.G.	284
Ilyin E.G.	243, 317	Kamenschikov O.Yu.	259
Imshinetsky I.M.	393	Kamysnaya K.S.	281
Inishev A.A.	419	Kaneva M.V.	282
Ionov A.M.	96	Kanunnikova O.M.	283, 284
Iordanescu R.	218	Kaplan-Ahiri I.	221
Irgashev R.A.	386	Karakhanov E.A.	348
Isaenko L.I.	247, 251	Karásková K.	301
Isaeva E.A.	207	Karavaev A.A.	207
Isaev V.A.	265	Karban O.V.	283
Isakov A.V.	63	Kargin Y.F.	381
Isaycheva L.A.	287	Kargin Yu.F.	140
Ishchenko A.V.	140	Karimullin R.R.	258
Ishihara K.N.	128	Karpushkin E.A.	354
Ismagilov Z.R.	130, 179	Kartseva M.E.	56
Istomina E.I.	64, 175, 266	Karyakin M.E.	240, 302, 340
Istomina T.S.	267	Kasenova Sh.B.	285, 286
Istomin P.V.	64, 175, 266	Kasenov B.K.	285, 286
Ivanenko S.Yu.	268	Katsnelson M.I.	44
Ivanenko V.I.	269, 270	Kaurova I.A.	217
Ivanov A.B.	271	Kaymieva O.S.	55
Ivanova E.A.	274	Kazak A.V.	390
Ivanova I.S.	342	Kazarinov I.A.	287
Ivanova M.A.	275	Kazin N.A.	386
Ivanova O.A.	121	Kazymova M.A.	405
Ivanova O.S.	315	Khabarov Yu.G.	288, 365
Ivanova O.V.	131	Khabas T.A.	281
Ivanov E.D.	272	Khabensky V.B.	52
Ivanov M.G.	65	Khaikina E.G.	289, 327
Ivanov V.F.	359		