

# Facile Redox Synthesis of Novel Bimetallic Cr<sup>n+</sup>/Pd<sup>0</sup> Nanoparticles Supported on SiO<sub>2</sub> and TiO<sub>2</sub> for Catalytic Selective Hydrogenation with Molecular Hydrogen

Olga A. Kirichenko <sup>1,2,\*</sup>, Elena A. Redina <sup>1,\*</sup>, Gennady I. Kapustin <sup>1</sup>, Marina S. Chernova <sup>1</sup>, Anastasiya A. Shesterkina <sup>1,3</sup> and Leonid M. Kustov <sup>1,4</sup>

<sup>1</sup> N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, 47 Leninsky prospect, Moscow, 119991, Russian Federation; gik@ioc.ac.ru (G.I.K.); marina.chernova.1998@inbox.ru (M.S.C.); anastasiia.strelkova@mail.ru (A.A.S.); lmk@ioc.ac.ru (L.M.K.)

<sup>2</sup> M.V. Lomonosov Institute of Fine Chemical Technologies, Russian Technological University MIREA, 86 Vernadsky prospect, 119571, Moscow, Russian Federation

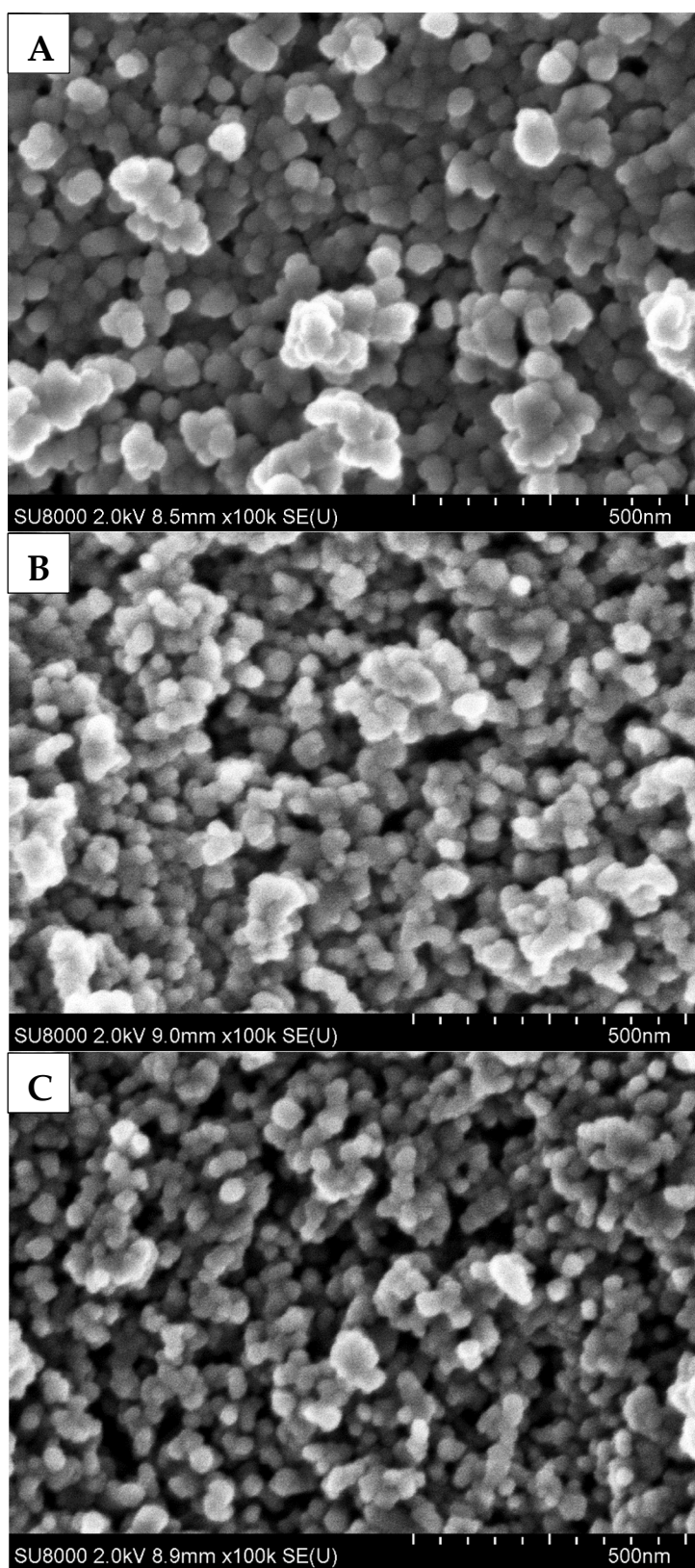
<sup>3</sup> National University of Science and Technology (MISIS), Nanochemistry and ecology department, 2 Leninsky prospect, 119991, Moscow, Russian Federation

<sup>4</sup> Chemistry Department, Moscow State University, Leninskie Gory 1, bldg. 3, 119992, Moscow, Russian Federation

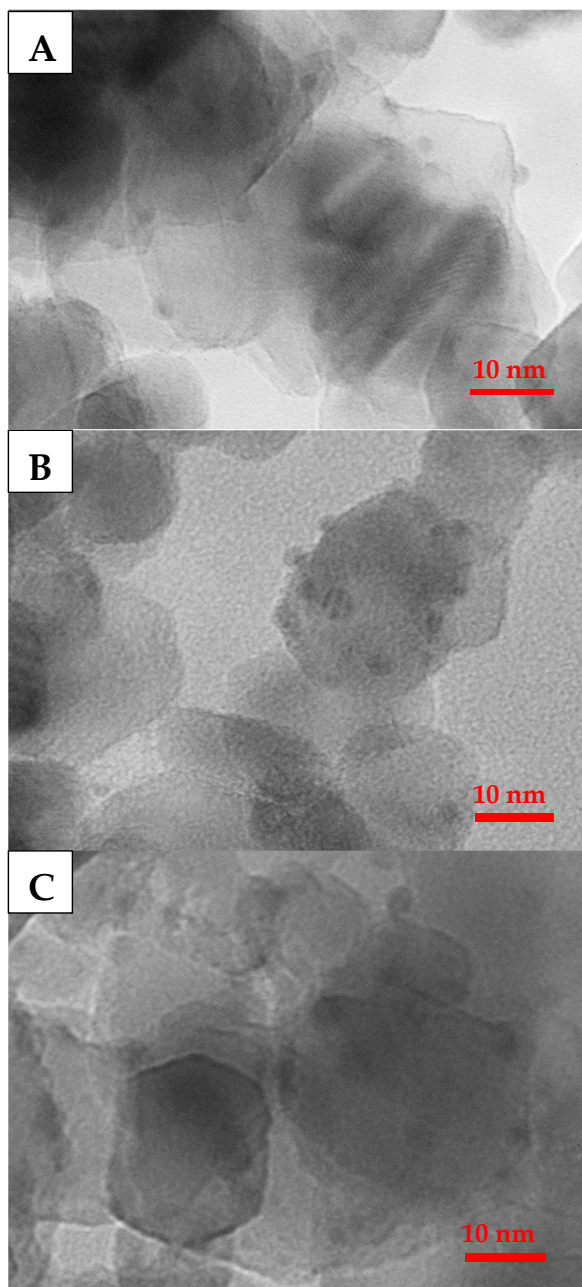
\* Correspondence: okiriche@hotmail.com\_or okiriche@ioc.ac.ru (O.A.K.); redinaea@ioc.ac.ru (E.A.R.)

**Table S1. Elemental analysis of the samples obtained by SEM-EDS**

<b>Sample</b>	<b>Pd/T</b>	<b>Cr/Pd/T-CoR</b>	<b>Cr/Pd/T-RC</b>	<b>Cr/Pd/T-RC-3</b>
Composition	1Pd/TiO <sub>2</sub>	0,36Cr/1Pd/TiO <sub>2</sub>	0,36Cr/1Pd/TiO <sub>2</sub>	1,1Cr/1Pd/TiO <sub>2</sub>
<b>Pd. % wt.</b>	0.8	1.6	0.9	1.0
	1.0	0.9	1.0	0.9
	0.8	1.2	0.9	0.9
<b>Average</b>	<b>0.9</b>	<b>1.2</b>	<b>0.9</b>	<b>0.9</b>
<b>Cr. % wt.</b>	–	0.4	0.3	1.2
		0.3	0.4	1.1
		0.6	0.2	1.1
<b>Average</b>		<b>0.4</b>	<b>0.3</b>	<b>1.1</b>
<b>Ti. % wt.</b>	60.9	56.8	54.4	56.2
	56.9	58.0	52.4	53.5
	54.1	51.4	51.9	55.1
<b>Average</b>	<b>57.3</b>	<b>55.4</b>	<b>52.9</b>	<b>54.9</b>
<b>O. % wt.</b>	31.2	34.0	33.7	33.0
	35.0	33.5	35.3	35.9
	37.6	31.7	37.0	34.1
<b>Average</b>	<b>34.6</b>	<b>33.1</b>	<b>35.3</b>	<b>34.3</b>



**Figure S1.** SEM images of the samples: (a) Cr/Pd/T-CoR; (b) Cr/Pd/T-RC; (c) Cr/Pd/T-RC-3.



**Figure S2.** TEM images and particle size distribution of the samples: (a) Cr/Pd/T-CoR; (b) Cr/Pd/T-RC; (c) Cr/Pd/T-RC-3