RE High Surface Area Silica Nanoparticles

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Novel fibrous shaped silica nanospheres, denoted as KCC-1 (KAUST Catalysis Center)^[1], have unique physical properties which have never before been reported in silica materials. These nanomaterials have been developed by Prof. J. M. Basset of King Abdullah University of Science and Technology (KAUST). A fibrous surface morphology arranged in three-dimensional structure forms the spheres (Fig. 1). Unlike traditional pore-based silica, these nanospheres possess a fibrous structure that increases accessibility to the available surface area; this in turn, significantly increases the catalytic activity.

These materials exhibit excellent physical properties, including a high surface area, a fibrous surface morphology, good thermal and hydrothermal

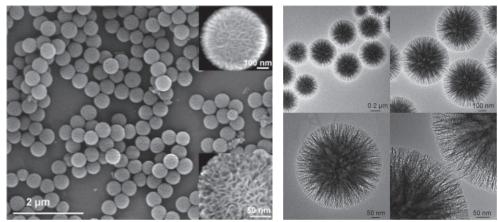


Figure 1: SEM and HRTEM images of silica nanospheres KCC-1

stabilities and high mechanical stability (Table 1). The fibrous morphology of KCC-1 remains unaffected even after mechanical compression up to 216 MPa pressure. This is superior to the conventional MCM-41 type of silica, which is affected at pressure 86 MPa.^[1]

A range of heterogeneous catalysts, prepared using KCC-1 as a supporting material, have been showing excellent catalytic activity for various transformations of research and industrial importance. As a catalyst support, sorbent or carrier, KCC-1 is able to demonstrate superior activity as compared to regular mesoporous silica materials in energy related processes [2-3], a variety of organic reactions [4-7], biomedical applications and drug delivery systems [8], optoelectronic devices [9] and many others.

96-5050	5050 High Surface Area Silica Nanoparticles Kit					Contains smallest unit size for each of the following		
Product#	Category	Grade	Particle Size (nm)	Surface Area (m²/g)	Pore Volume (cm³/g)	Color and Form	Available Unit Sizes	
14-6100	Large	(KCC-1 L1)	~900-1000	~700	~1.4	white pwdr.	1g, 5g	
14-6110	Large	(KCC-1 L2)	~900-1000	~600	~1.2	white pwdr.	1g, 5g	
14-6120	Large	(KCC-1 L3)	~900-1000	~550	~0.9	white pwdr.	1g, 5g	
14-6200	Medium	(KCC-1 M1)	~400-450	~400	~0.7	white pwdr.	1g, 5g	
14-6210	Medium	(KCC-1 M2)	~300-350	~600	~0.6	white pwdr.	1g, 5g	
14-6300	Small	(KCC-1 S1)	~130-190	~380	~0.8	white to beige pwdr.	1g, 5g	
14-6310	Small	(KCC-1 S2)	~40-50 nm	~520	~1.3	white to beige pwdr.	250mg, 1g, 5g	

Components also available for individual sale

References:

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Email: info.europe@strem.com

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Strem Chemicals, Inc. 7 Mulliken Way Newburyport, MA 01950 U.S.A Tel: 978.499.1600 Fax: 978.465.3104	Strem Chemicals, Inc. 15, rue de l'Atome Zone Industrielle 67800 BISCHHEIM France Tel: (33) 03 88 62 52 60 Fax: (33) 03 88 62 26 81	Strem Chemicals, Inc. Postfach 1215 77672 KEHL Germany Tel: 0 78 51/ 7 58 79	Strem Chemicals UK Ltd. An Independent Distributor of Strem Chemicals Products Newton Hall, Town Street Newton, Cambridge England CB22 7ZE Tel: 0845 643 7263 Eax:0845 643 7263				

Email: info.europe@strem.com

Fax:0845 643 7362 Email: enquiries@strem.co.uk

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Email: info@strem.com