

Resource Recycling of Red Soil to Synthesize Fe₂O₃/FAU-type Zeolite Composite Material for Heavy Metal Removal

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Materials

Name	Company	Catalog Number	Comments
Chemicals			
Cadmium nitrate tetrahydrate	Shanghai Aladdin Bio-Chem Technology Co., LTD	C102676	AR, 99%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Chromium(III) nitrate nonahydrate	Shanghai Aladdin Bio-Chem Technology Co., LTD	C116446	AR, 99%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Copper sulfate pentahydrate	Shanghai Aladdin Bio-Chem Technology Co., LTD	C112396	AR, 99%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Lead nitrate	Shanghai Aladdin Bio-Chem Technology Co., LTD	L112118	AR, 99%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Nickel nitrate hexahydrate	Shanghai Aladdin Bio-Chem Technology Co., LTD	N108891	AR, 98%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Nitric acid	Shanghai Aladdin Bio-Chem Technology Co., LTD	N116238	AR, 69.2%. Used as solvent in ICP-MS test.
Potassium dichromate	Shanghai Aladdin Bio-Chem Technology Co., LTD	P112163	AR, 99.8%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Silicon dioxide	Shanghai Aladdin Bio-Chem Technology Co., LTD	S116482	AR, 99%. For synthesis of zeolite.
Sodium (meta)arsenite	Sigma-aldrich	S7400-100G	AR, 90%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.
Sodium hydroxide	Shanghai Aladdin Bio-Chem Technology Co., LTD	S111502	Pellets. For the synthesis of zeolite.
Zinc nitrate hexahydrate	Shanghai Aladdin Bio-Chem Technology Co., LTD	Z111703	AR, 99%. Make 1,000 ppm stock solution for the test of adsorption performance of zeolite.

Equipment			
Air-dry oven	Shanghai Yiheng Technology Instrument Co.,LTD.	DHG-9075A	Used for hydrothermal crystallization and drying of sample
Analytical balance	Sartorius Scientific Instruments Co.LTD	BSA224S-CW	Used for weighing samples
Centrifuge tubes	Nantong Supin Experimental Equipment Co., LTD		
High speed centrifuge	Hunan Xiang Yi Laboratory Instrument Development Co.,LTD	H1850	Used for separation of solid and liquid samples
Multipoint magnetic stirrer	IKA Equipment Co.,LTD.	RT15	Used for stirring samples
Oscillator	Changzhou Guohua Electric Appliances Co.,LTD.	SHA-B	For uniform mixing of samples
Syringe-driven filter	Tianjin Jinteng Experimental Equipment Co.,LTD.		0.22 μm. For filtration.
Softwares			
JADE 6.5	Materials Data& (MDI)		
Mercury	Cambridge Crystallographic Data Centre (CCDC)		
Materials Studio	Accelrys Software Inc.		
Websites			
Database of Zeolite Structures: http://www.iza-structure.org/databases/			
ICSD: https://icsd.products.fiz-karlsruhe.de/en			