

Materials List for:

Surface Properties of Synthesized Nanoporous Carbon and Silica Matrices

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Materials

| Name | Company | Catalog Number | Comments |
|--|---|---------------------|---|
| 1,3,5-trimethylbenzene | Sigma-Aldrich, Poland | M7200 Sigma-Aldrich | Mesitylene, also known as 1,3,5-trimethylbenzene, reagent grade, assay: 98%. |
| anhydrous ethanol | POCH, Avantor Performance Materials Poland S.A. | 396480111 | Assay, min. 99.8 %, analysis-pur (a.p.) |
| ASAP 2020. Accelerated Surface Area and Porosimetry System | Micromeritics Instrument Corporation, Norcross, GA, USA | | Samples were outgassed before analysis at 120 °C for 24 hours in degas port of analyzer. The dead space volume was measured for calibration on experimental measurement using helium as a adsorbate. |
| Automatic burette Dosimat 665 | Metrohm, Switzerland | | The surface charge properties were experimentally determined by potentiometric titration of the suspension at constant temperature 20°C maintained by the thermostatic device. Prior to potentiometric titration measurements, the solid samples were dried by 24 hours at 120 °C. The initial pH was established by addition of 0.3 cm ³ of 0.2 mol/L HCl. The 0.1 mol/L NaOH solution was used as a titrant, added gradually by using automatic burette. |
| Digital pH-meter pHm-240 | Radiometer, Copenhagen | | Device coupled with automatic burette |
| ethyl alcohol | POCH, Avantor Performance Materials Poland S.A. | 396420420 | Assay, min. 96 %.analysis-pur (a.p.) |
| glucose | POCH, Avantor Performance Materials Poland S.A. | 459560448 | assay 99.5% |
| Hydrochloric acid | POCH, Avantor Performance Materials Poland S.A. | 575283115 | Hydrochloric acid, 35 - 38% analysis-pur (a.p.) |
| HOPG graphite substrate | Spi Supplies | LOT#1170906 | HOPG SPI-2 Grade, 20x20x1 mm |
| Impedance analyzer Solartron 1260 | Solartron | | |
| Pluronic PE 6400 polymer | BASF (Polska) | | (EO ₁₃ PO ₇₀ EO ₁₃) |
| Pluronic PE10500 | BASF Canada Inc. | | Molar mass 6500 g/mol |
| potassium hydroxide | Sigma-Aldrich, Poland | P5958 Sigma-Aldrich | BioXtra, ≥85% KOH basis |
| SEM microscope | JEOL JSM-7001F | | Scanning Electron Microscope with EDS detector |

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|------------------------------------|---|-----------|--|
| Sigma Force Tensiometer 701 | KSV, Sigma701, Biolin Scientific | | force tensiometer |
| Sulfuric acid (VI) | POCH, Avantor Performance Materials Poland S.A. | 575000115 | |
| surface glass type KS 324 Kavalier | Megan Poland | | 80 % of SiO ₂ , 11% of Na ₂ O and 9% of CaO |
| Tecnai G2 T20 X-TWIN | FEI, USA | | Transmission Electron Microscope with EDX detector. |
| TEM microscope | JEOL JEM-1400 | | |
| temperature controller ITC503 | Oxford Instruments | | |
| Tetraethylorthosilicate | Sigma-Aldrich, Poland | 131903 | Tetraethyl silicate, TEOS, reagent grade, assay 98% |
| Ultrapure water | Millipore, Merck KGaA, Darmstadt, Germany | SIMSV0001 | Simplicity Water Purification System Ultrapure Water: 18.2 MegOhm·cm, TOC: <5 ppb |