Materials List for:

Green and Low-cost Production of Thermally Stable and Carboxylated Cellulose Nanocrystals and Nanofibrils Using Highly Recyclable Dicarboxylic Acids

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Materials

Name	Company	Catalog Number	Comments
Bleached eucalypus pulp	Aracruz Cellulose		
Unbleached mixed hardwood kraft pulp	International Paper		
Maleic acid	Sigma-Aldrich	M0375-1KG/CAS110-16-7	Powder; assay: 99.0% (HPLC)
Glycerol	Sigma-Aldrich	G5516-4L/CAS56-81-5	
Sodium hydroxide	Fisher Scientific	S318-500/CAS1310-73-2, 497-19-8	Certified ACS
Sodium chloride	Mallinckrodt	7581-12/CAS7647-14-5	Crystal,AR
Cupriethylenediamine solution	GFS Chemicals	E32103-1L/CAS14552-35-3	1 M, for determination of solution viscosity of pulps
Acetone	Fisher Scientific	A18-500/CAS67-64-1	Certified ACS
Accu-Test™ Vials for COD Testing	Bioscience,Inc.	01-215-28	COD testing for 20 to 900 mg/L standard range concentration
Heating plate	IKA		Mode: C-MAD HS7 digital
Magnetic stir bar	ACE Glass		
Pyrex three-neck round-bottom flask	Sigma-Aldrich	CLS4965B500-1EA	
Dialysis tubing cellulose membrane	Sigma-Aldrich	D9402-100FT	Typical molecular weight cut-off = 14,000 kDa
Disposable aluminum dishes	Sigma-Aldrich	Z154857-1PAK	Circles, 60 mm
Disintegrator	Testing Machines Inc.(TMI)		
Microfluidizer	Microfluidics Corporation		
Sonicator	Qsonica LLC.		Mode: 3510R-MT, 50-60 Hz, 180 W
Zeta potential analyzer	Brookhaven Instruments Corporation		
FTIR	PerkinElmer		
Conductometric titrator	Yellow Springs Instrument (YSI)		
TGA analyzer	PerkinElmer		
X-ray diffractometer	Bruker Corporation		
AFM imging	AFM Workshop		
SEM imaging	Carl Zeiss		