

Materials List for:

Preparation and Friction Force Microscopy Measurements of Immiscible, Opposing Polymer Brushes

Sissi de Beer^{1,2}, Edit Kutnyanszky², Martin H. Müser^{1,3}, G. Julius Vancso²

¹Jülich Supercomputing Centre, Forschungszentrum Jülich

²Materials Science and Technology of Polymer, MESA+ Institute for Nanotechnology, University of Twente

³Department of Materials Science and Engineering, Universität des Saarlandes

Correspondence to: G. Julius Vancso at G.J.Vancso@utwente.nl

URL: <https://www.jove.com/video/52285>

DOI: [doi:10.3791/52285](https://doi.org/10.3791/52285)

Materials

Name	Company	Catalog Number	Comments
Methyl methacrylate	Sigma-Aldrich	M55909	Monomer for PMMA synthesis, cleaned by pressing through a basic alumina column
(3-aminopropyl)triethoxysilane	Sigma-Aldrich	440140	vapor deposited silane monolayer
triethylamine	Sigma-Aldrich	T0886	Reagent for the ATRP initiator moiety coupling.
2-bromo-2-methylpropionyl	Sigma-Aldrich	252271	ATRP initiator moiety.
toluene	Biosolve	20150501	Coupling medium for ATRP moiety
CuBr	Sigma-Aldrich	212865	ATRP catalyst.
2,2'-Bipyridyl	Sigma-Aldrich	14453	Cu complexing ligand for ATRP of MMA
<i>N,N,N',N'',N'''</i> -Pentamethyldiethylenetriamine	Sigma-Aldrich	369497	Cu complexing ligand for ATRP of NIPAM
acetic acid 98-100%	Merck	8187551000	For cleaning CuBr.
Sulfuric acid	Sigma-Aldrich	320501	For the preparation of Piranha solution
Hydrogen peroxide 33%	Merck	1.07210.1000	For the preparation of Piranha solution
Ethanol	Merck	1.00983.1000	For cleaning substrates.
Basic aluminum oxide 60	Merck		For cleaning monomers.
Chloroform	Biosolve	3080501	For monolayer deposition and substrate cleaning.
Methanol	Biosolve	13680501	For polymerization medium.
Acetophenone	Acros Organics	102410010	For AFM measurement environment.
<i>N</i> -isopropyl acrylamide	Acros Organics	412780250	Monomer for PNIPAM synthesis, recrystallized from toluene/hexane
Poly(ethylene glycol) methacrylate	Sigma-Aldrich	409529	Monomer for Si-POEGMA synthesis, cleaned by pressing through a basic alumina column.
MilliQ water	MilliQ Advantage A 10 purification system		ATRP medium, AFM measurement environment and for substrate cleaning.
Silicon substrates			
Gold coated substrates			
AFM probe, CP-FM-Au	SQube		AFM measurement
Name	Company	Catalog Number	Comments

dithiodiundecane-11,1-diylbis[2-bromo-2-methylpropanoate] (DTPR)			Initiator, for Si-ATRP on gold surfaces. Synthesized according to <i>Macromolecules</i> , 33 , 597-605 (2000).
Atomic Force Microscope	Bruker Multimode V controller		