Supplementary Information for:

"Controlled Decoration of Surface with Macromolecules: Polymerization on Self-assembled Monolayer (SAM)"

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[b]Chemical Lab, CSIR-CLRI, Adyar, Chennai-600020. Email: abmandal@hotmail.com Fax: 91-44-24912150, Tel: 91 -44 24910846.

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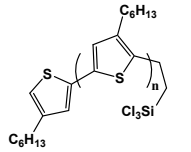
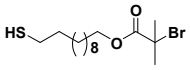
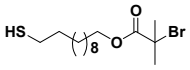
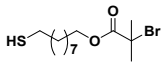
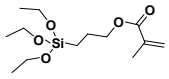
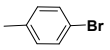
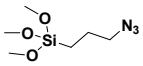
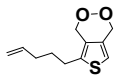
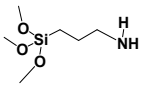
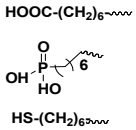
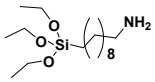
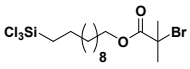
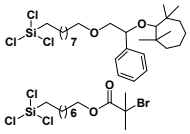
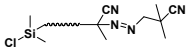
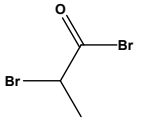
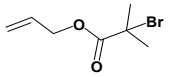
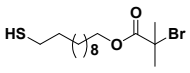
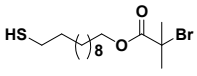
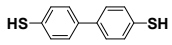
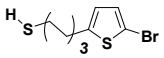
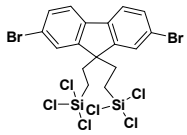
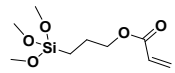
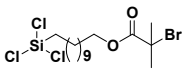
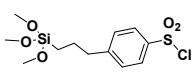
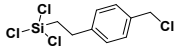
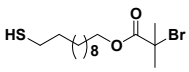
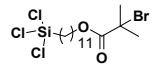
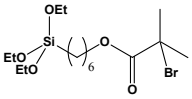
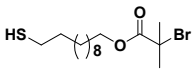
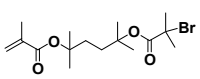
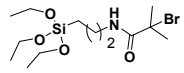
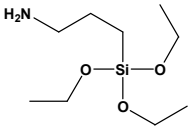
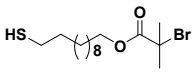
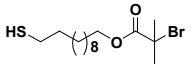
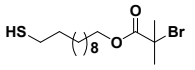
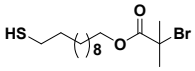
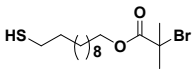
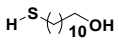
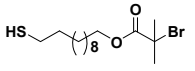
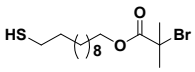
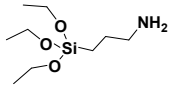
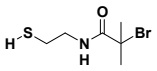
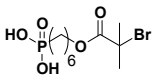
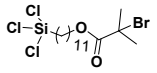
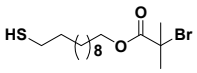
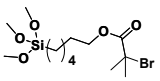
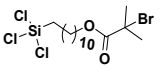
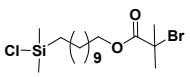
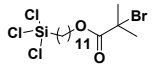
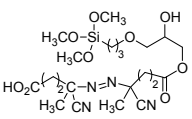
Table S1. Surface functionalization with polymer by "graft from", "graft through", "direct" method

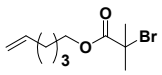
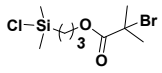
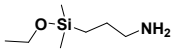
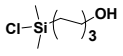
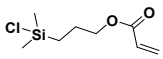
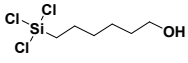
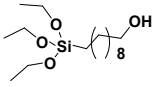
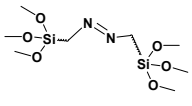
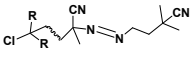
Surface	Molecules used to form SAM prior to polymerization	Polymerization technique	Polymer brush	Appliction (demonstrated/perceived) area	Reference
Silicon, Quartz , ITO	 Molecular weight ~ 4000 g/mol	Grignard metathesis polymerization (GRIM)	Poly(3-hexylthiophene) (P3HT)	Organic photovoltaics	Ref[1]
Au-surface		Surface initiated polymerization (SIP)	poly(carboxybetaine methacrylate) (polyCBMA)	Protein resistance and protein immobilization	Ref[2]
Au -surface		Surface initiated atom transfer radical polymerization (SI-ATRP)	poly(sulfobetaine methacrylate) (polySBMA) or poly(carboxybetaine methacrylate) (polyCBMA)	Nonbiofouling surface	Ref[3]
Au-surface		SI-ATRP	polymethyl methacrylate monomer (polyMMA), poly ethylene glycol dimethacrylate (polyEGDMA)	Organic thin film transistors	Ref[4]
Silicon wafer		Radical graft polymerization (RGP)	Poly styrene (PS)	-	Ref[5]

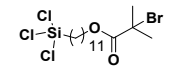
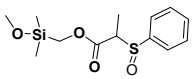
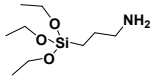
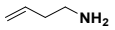
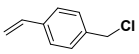
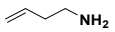
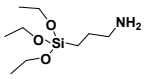
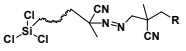
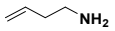
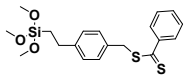
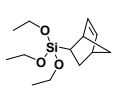
Silicon wafer		Ni(0)-mediated cross-coupling	Polyfluorene (PF)	Polymeric light emitting diods (PLED	Ref[6]
ITO, Silicon wafer & glass		"Click" polymerization	Thiophene & phenyl polymer	-	Ref[7]
ITO		Electropolymerization	$(EDOT)_3$ & poly thiophene	Photovoltaic	Ref[8]
ITO		-	porphyrins and porphyrin–fullerene dyads	Photo-induced electron transfer	Ref[9]
Au-surface & ITO		Electropolymerization	Polythiophenes & polypyrole	Electronic components	Ref[10]
Glass		Sonogashira polymerization	penta(p -phenylene ethynylene) (PE)	Fluorescent sensors	Ref[11]
Silicon wafer		SI-ATRP	polystyrene-b-poly (methyl acrylate)-b-polystyrene (PS-b-PMA-b-PS)	Solvent-responsive	Ref[12]
Silicon wafer		"Living" Free Radical Polymerization (LFRP)	poly(methyl methacrylate) (PMMA)	Control of surface properties	Ref[13]
Silica substrate		Radical chain polymerization	Polystyrene (PS)	-	Ref[14]
Silicon wafer		Atom transfer radical polymerization (ATRP)	polyNIPAM	Thermoresponsive	Ref[15]
Au-surface		ATRP	*tert*-butyl acrylate (t-BA), poly(acrylic acid) (PAA)	Immunosensors	Ref[16]
Au-surface		ATRP	poly[2-(methacryloyloxy)ethyltrimethylammonium chloride] (PMETAC)	-	Ref[17]
Au-surface		ATRP	poly(methyl methacrylate) (PMMA)	-	Ref[18]

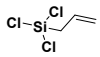
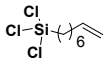
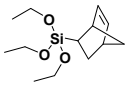
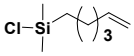
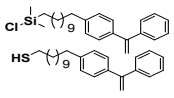
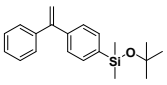
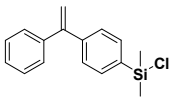
Au-surface		Surface-Initiated Anionic Polymerization-(SIAP)	PS	-	Ref[19]
Au-surface		Surface-initiated Kumada catalyst-transfer polycondensation (SI–KCTP)	Polythiophene & polyphenylene	-	Ref[20]
Silicon wafer & Quartz		Ni (0)mediated Yamamoto-type poly condensation	Poly(9,9-Dihexylfluorene)	PLED	Ref[21]
Silicon wafer		Radical graft polymerizations (RGP)	PS	-	Ref[5]
Silicon wafer		ATRP	poly(styrene-b-tert-butyl acrylate)	-	Ref[22]
Silicon substrate		Langmuir-Blodgett and ATRP	Polymethyl methacrylate (polyMMA)	-	Ref[23]
Silica gel		Surface-Initiated Radical Polymerization (SIRP)	Poly acrylamide	-	Ref[24]
Au -surface		SI-ATRP	poly[2-(methacryloyloxy) ethyl]trimethylam moniumchloride (PMETAC)	-	Ref[25]
Silicon wafer		SI-ATRP	Poly(NHS4VB-b-styrene), Poly(styrene-b-NHS4VB)	-	Ref[26]
silicon wafer		SI-ATRP	Poly[{2-(methacryloyloxy) ethyl}trimethylam monium chloride] poly(MTAC)	-	Ref[27]
Au-surface		SI-ATRP	Au NP-2-(methacryloyloxy)e thyltrimethylammo nium chloride (poly-METAC)	Stimuli-responsive	Ref[28]
Silicon wafer		SI-ATRP	PS	Stimuli-responsive	Ref[29]

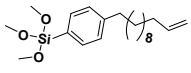
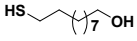
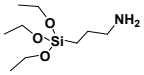
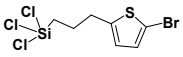
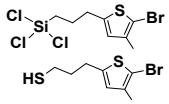
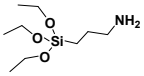
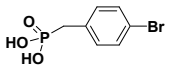
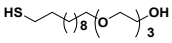
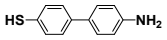
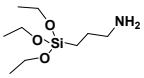
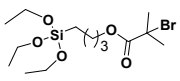
Silicon wafer		SI-ATRP	poly [1-(4-vinylbenzyl)-3-butyl imidazolium hexafluorophosphate] (PVBIm-PF6)	Reversibly switchable surface or tunable wettability	Ref[30]
Silicon wafer		SI-ATRP	poly[2-(1-butylimidazolium-3-yl)ethyl methacrylate hexafluorophosphate] (PBIMH-$PF6^-$)	Tunable wettability	Ref[31]
Au-surface		SI-ATRP	Poly (oligo ethylene glycol) methyl methacrylate poly (OEGMA)	Non bio-fouling	Ref[32]
Au surface		SI-ATRP	polymethyl methacrylate (PMMA) and polyglycidyl methacrylate (PGMA)	-	Ref[33]
Au surface		SI-ATRP	PMMA, PGMA, poly butyric acid, poly2-hydroxyethyl methacrylate (PHEMA)	Molecular “ultra-glue”	Ref[34]
Au-surface & SiO_2		SI-ATRP	Poly MMA and poly(2-hydroxyethyl methacrylate) (PHEMA)		Ref[35]
Au-surface		SI-ATRP	Poly ethylene glycoldimethacrylate (EGDMA)	Swelling study	Ref[36]
Au-surface		SI-ATRP	poly(Nvinylpyrrolidone) (PVP)	Protein adsorption, SPR chips and exhibited potential applications in biosensors and biochips	Ref[37]
Au-surface		SI-ATRP	poly oligo(ethylene glycol)methylmethacrylate (POEGMA)	Protein adsorption	Ref[38]
Au-surface		surface-initiated, controlled/ ‘‘living’’ radical polymerizations (SI-CRPs)	polyOEGMA	Non-biofouling	Ref[39]
Silicon wafer		SI-ATRP	Poly(N-vinylpyrrolidone)	Protein adsorption	Ref[40]

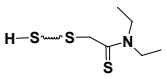
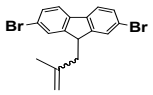
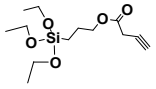
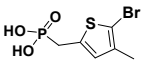
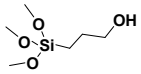
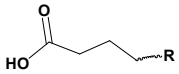
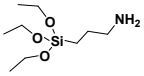
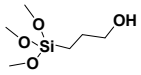
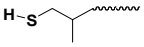
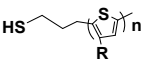
Au -Surface		SI-ATRP & Click chemistry	poly(5-ferrocene-triazolyl methac rylate)(PFTMA)	Redox-responsive properties	Ref[41]
ITO		SI-ATRP	polyferrocene-containing methacrylate (PolyFcMA) & PMMA	-	Ref[42]
Silicon wafer		SI-ATRP	PS-b-poly(tert-butyl acrylate) (P(t-BA))	-	Ref[43]
Au surface		SI-ATRP	poly(2-hydroxyethyl methacrylate) (PHEMA)poly(n-butyl methacrylate) (PBMA)	Amphiphilic surface	Ref[44]
silicon wafer or quartz substrate		SI-ATRP	mesogenic azobenzene	As liquid crystalline	Ref[45]
Silicon wafer		SI-ATRP	Poly- spiropyran methacrylate –co MMA. (SPMA)-co-MMA	Reversible colorimetric ion sensors	Ref[46]
Silicon surfaces		Reverse atom transfer radical polymerization (R-ATRP)	poly(n-butyl acrylate) (PnBA)/ poly(acrylic acid) (PAA)	Switchable surface	Ref[47]
Silicon wafer		Surface-Initiated Controlled Radical Polymerization (SI-CRP)	poly(ethylene glycol) methacrylate (PEGMA)	Hydrolytically degradable polymer	Ref[48]
Silicon wafer		ATRP and Reversible addition fragmentation chain (RAFT)	PSty-b-PAA and PSty-b-PNIPAM	Stimuli-responsive	Ref[49]
Silicon wafer		RAFT	sodium 4-styrenesulfonate (NaStS) / 2-hydroxyethyl methacrylate (HEMA)	-	Ref[50]

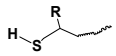
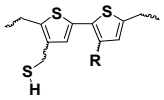
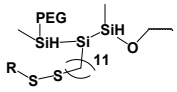
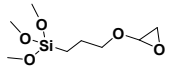
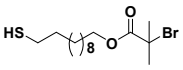
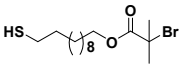
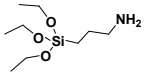
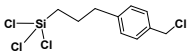
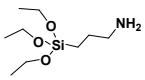
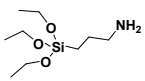
ITO		SI-ATRP	poly[3- (methacryloylamino)propyl]dimethyl(3-sulfopropyl)ammonium hydroxide inner salt (PSBMAA)	Antifouling property	Ref[51]
Silicon substrates		SI-ATRP	poly(ethylene glycol)methacrylates (PEGMA)	Protein adsorption study	Ref[52]
Silicon wafer		SI-ATRP	poly(2-(dimethylamino) ethyl methacrylate) (PDMAEMA), poly(2-(diethylamino)ethyl methacrylate) (PDEAEMA), poly(2-(dimethylamino)ethyl acrylate) (PDMAEA), poly(2-(tert-butylamino) ethyl methacrylate) (PTBAEMA),	-	Ref[53]
Silicon wafer		TEMPO	PS-con-(PEG*n)* [PS]-*[STY-PEGn)*	Protein adsorption and cell localization	Ref[54]
Si / SiO_2		nitroxide-mediated controlled "living" free radical polymerization (NM-LFRP)	polyacrylate/poly methacrylate and PS	-	Ref[55]
Silicon wafer		TEMPO	$[PS]_{99}$-[Fluorinated Polymer]$_{25}$	-	Ref[56]
SiO_2		TEMPO	PS & PnBA	Langmuir–Blodgett lithography	Ref[57]
Siliconwafer		surface-initiated nitroxide-mediated polymerization (NMP)	polyNIPAM	Protein imobilization	Ref[58]
Silicon wafer		Reversible Addition Fragmentation Chain Transfer Technique (RAFT-CTT)	Homo & block copolymers PS, PMA, poly*N*,*N*-dimethylacrylamide (PDMA)	Solvent respomsive	Ref[59]

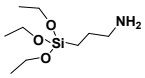
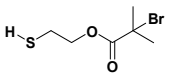
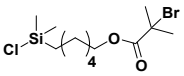
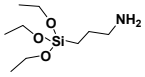
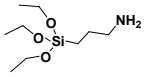
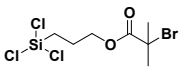
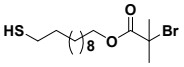
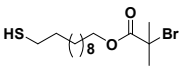
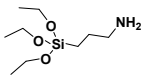
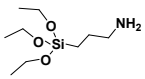
silicon wafer		RAFT	Homo & diblock copolymers PMMA and PSty *PDMAEMA &PMA*	-	Ref[50]
Silicon wafer		RAFT	PS & PBA	-	Ref[51]
Silicon wafer		RAFT	PMMA	-	Ref[52]
silicon wafer		RAFT	poly[(ar-vinylbenzyl) trimethylammonium chloride)] [poly(VBTAC)]	DNA immobilization	Ref[53]
Silicon substrate		Interface-Initiated RAFT Graft Polymerization	Homo & co polymers (poly 2-dimethylamino)ethyl methacrylate, PMMA, poly 2-hydroxyethyl methacrylate)	-	Ref[54]
Silicon wafer		RAFT	Co-polymer of 4-vinylbenzoic acid, ((ar-vinylbenzyl) trimethylammonium chloride) Poly(VBA-co-VBTAC)	Ph-responsive	Ref[55]
Silicon wafer		RAFT	poly glucosylureaethyl methacrylate PolyGUMA	‘‘Bio-inert (anti-biofouling)’’surface design	Ref[56]
Silicon wafer & glass substrates		Microwave-Assisted Surface-Initiated Radical Polymerization (μ W-SIRP)	pDMA, pDMAEMA, pHEA, pMMA , PS	-	Ref[57]
Silicon wafer		RAFT	cationic poly(VBTAC)	Stimuli-responsive	Ref[58]
Silicon wafer		ATRP	Poly Pentafluorophenyl Acrylate (polyPFPA)	Light-responsive	Ref[59]
Si / SiO_2		Ring opening metathesis polymerization	Polymer from norbornene	-	Ref[70]

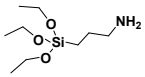
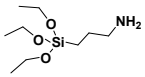
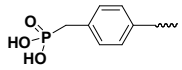
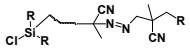
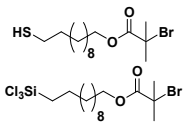
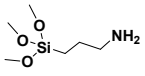
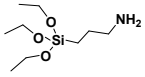
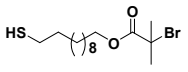
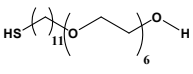
		(ROMP)			
Silicon wafer		ROMP	Polymer from norbornene	-	Ref[71]
Au -Surface		ROMP	Norbornene based polymers p(Nb-diMeOH)-b-p(Nb-COOMe).	Solvent-dependent morphological switchability	Ref[72]
Au -Surface		ROMP	Poly-5-(perfluoro-n-alkyl)norbornenes (pNBFn)	Hydrophobic and oleophobic surface	Ref[73]
Silicon wafer		SI-ROMP	Spiropyran-based polymer	Photochromism & solvent-dependent morphology	Ref[74]
Silicon substrates		SI-ROMP	Polybutadiene	-	Ref[75]
Silicon wafer		SI-ROMP	Cyclopentene (CP), 1,4-cyclohexadiene (CHD),cycloheptene (CHP), cis-cyclooctene (CO), cis,cis-1,5-cyclo octadiene(COD), 1,3,5,7-cycloocta tetraene (COT), cyclododecene (CD), and trans,trans,cis-1,5,9-cyclodo decatriene (CDT),	-	Ref[76]
Au-surface, silicon wafer		Living Anionic Surface Initiated Polymerization (LA-SIP)	PS- isoprene (PI) and butadiene (PBd)	-	Ref[77]
Silicon wafer		anionic polymerization	PI-b-polyethylene oxide (PEO)	-	Ref[78]
Silicon wafer		anionic ring-opening multibranching polymerization	Polyglycidol	-	Ref[79]
silicon wafer		Surface-initiated living anionic polymerization (SI-LAP)	poly(styryl)lithium & poly isoprene (PI)	-	Ref[80]

Silicon wafer		carbocationic polymerization	polystyrene (PS)	-	Ref[81]
Au-surface		SI-LCP	Poly2-ethyl-2-oxazoline	-	Ref [82]
Si-wafers, glasses and metal oxide		Kumada Catalyst-Transfer Polycondensation (KCTP)	P4VP-b-PS(I)-g-P3HT	Photovoltaic	Ref[83]
Silicon wafer		SI-KCTP	poly(p-phenylene) (PPh) films	-	Ref[84]
Silicon wafer & ITO		SI-KCTP	poly(3-methylthiophene)	-	Ref[85]
Silicon wafer		Ni(0)-SIP & thiol-Michael click reaction	poly(N-carbo benzyloxy-L-lysine), poly(g-benzyl-L-glutamate) and poly(S-tert-butylmercapto-L cysteine)	-	Ref[86]
ITO		SI-KCTP	P-3-Methyl thiophene	-	Ref[87]
Au-surface		Surface initiated Enzymatic polymerization (SI-EP)	Poly (caprolactone), Poly (p-dioxanone)	Biodegradable	Ref[88]
Au-surface		SIP	PS	-	Ref[89]
Silicon wafer		Surface-Initiated Reverse Iodine Transfer Polymerization (SI-RITP)	PMMA-b-PNIPAM	Amphiphilic	Ref[90]
Silicon substrate		Surface-Initiated Organotellurium-Mediated Living Radical Polymerization (SI-TERP)	Poly (styrene, methyl methacrylate, butyl acrylate, N-isopropyl acrylamide, N-vinyl pyrrolidone (NVP), and N-vinyl carbazole (NVC).)	-	Ref[91]

Au-surface		Self-templating surface-initiated polymerization (ST-SIP)	poly 3-trimethylsilyl-2-propynyl methacrylate (TPM),	Photovoltaic devices	Ref[92]
Silicon wafer		Yamamoto-type polycondensation	poly(9,90-n-dihexyl fluorene) (PDHF)	Nanoimprinted sensors, PLEDs, OFETs, and bioactive surfaces	Ref[93]
Silicon wafer & Quartz		Surface-directed tungsten-catalyzed polymerization	Polyacetylene	-	Ref[94]
ITO		SI-KCTP	Poly(3-methylthiophene) (P3MT)	Electrochemical properties	Ref[95]
Silicon wafer or quartz plates		living anionic polymerization (LAP & ATRP)	Poly(n-hexylisocyanate)-b-poly[3-(trimethoxysilyl) propyl methacrylate] (PHIC-b-PTMSM)	FET	Ref[96]
Silicon wafer		ring-opening cationic polymerization	poly(2-isopropyl-2-oxazoline)	Stabilization of inorganic nanoparticles	Ref[97]
Silicon substrate		anionic polymerization	PS	-	Ref[98]
Silicon wafer		Radical polymerization	poly(ethylene glycol) methyl ether methacrylate (PEGMA), 3-(trimethoxysilyl)propyl methacrylate (TMSMA), and N-acryloxy Succinimide (NAS), Poly(TMSMA-*r*-*PEGMA-r-NAS)*	Antibiofouling Property	Ref[99]
Au-Surface		living anionic polymerization	PS-S-H	-	Ref[100]
Au-surface		Grignard metathesis (GRIM) reaction	poly(3-butylthiophene) P3BT	Hole mobility	Ref[101]

Au -surface		Aqueous Reversible Addition-Fragmentation Chain Transfer (RAFT) Polymerization (aq-RAFT-CTA)	poly(sodium 4-styrenesulfonate), poly((ar-vinyl benzyl) trimethy lammonium chloride), poly (N,N-dimethylacrylamide),and poly(3-[2-(N-methylacryl amido)-ethyl dimethyl ammonio]propane sulfonate-b-N,Ndimethylacrylamide)	Stimuli responsive behavior	Ref[102]
Au-surface		Stille coupling	Poly(3-(6-thiohexyl)-4¢-dodecyl-2,2¢-bithiophene)	-	Ref[103]
Au-surfaec			PEG chains on a polysiloxane polymers	Protein-resistant	Ref[104]
Silicon wafer		Surface-Initiated photo polymerization SIPP (UV-irradiation)	Poly(*N-isopropylacrylamide) [P(NIPAM]*	Temperature-responsive	Ref[105]
Au-surface		SI-ATRP	PNIPAM	Molecular transport in thin thermo responsive film	Ref[106]
Au-surface		SI-ATRP	PNIPAM	Stimuli-responsive	Ref[107]
Glass surface		surface initiated redox polymerization (SI-Red-P)	PNIPAM	Stimuli-responsive	Ref[108]
Silicon wafer & Quartz		SI-ATRP	PNIPAAm-b- 2-lactobionamidoethyl-methacrylate (PLAMA)	Thrmo-responsive	Ref[109]
Silicon surface		SI-ATRP	PNIPAM	Control of protein adsorption.	Ref[110]
Silicon wafer & Quartz		SI-ATRP	PNIPAM	Temperature-Controlled Cell Adhesion/Detachment	Ref[111]

Silicon wafer	1-trichlorosilyl-2-(m/p chloro Methylphenyl) ethane	SIP	Poly(acrylamide) (PAAm)	Switchable surface	Ref[112]
Au, Glass slides, & Silicon wafer	11-(2-bromo-2-methyl)-Propionyl undecyl trichloro silane , $(BrC(CH_3)_2COO(CH_2)_{11}S)_2$	-	PNIPAM	Control of protein adsorption	Ref[113]
Silica Wafer		SI-ATRP	PNIPAM	detection of breast cancer recurrence DNA	Ref[114]
Au-surface		SI-ATRP	Poly(OEGMA-co-2-(2-methoxyethoxy)ethyl methacrylate (MEO2MA)	Controlled Cell Adhesion	Ref[115]
Silicon wafer		SI-ATRP	PMMAA	pH sensitive	Ref[116]
ITO, Silicon wafer Au, & glass		SI-ATRP	Poly(N,N-diethylaminoethyl methacrylate) (PDEAEMA	pH responsive	Ref[117]
Silicon wafer		SI-ATRP	PtBA, PS and PAA−PS	Locking Switching	Ref[118]
Silicon wafer		SI-ATRP	poly(4,5-dimethoxy-2-nitrobenzyl methacrylate) (PNVOCMA)	Photo responsive, Hydrophilic Patterning	Ref[119]
Au-Surface		ATRP	Poly(NIPAAm-Co-AECPBA)	Glucose-responsive & FET	Ref[120]
Au-surface		SI-ATRP	PNIPAAM-co-PAA-PBA	Glucose-responsive	Ref[121]
Silicon wafer		SI-ATRP	Poly 4,5-dimethoxy-2-nitrobenzyl (PNVOC)	Phototunable response	Ref[122]
Glass		Sonogashira polymerization	PPEs	Fluorescence sensing	Ref[123]

quartz slides		SI-ATRP	Ppoly4,5-dimethoxy-2-nitrobenzyl (PNVOC), (poly(2-aminoethyl methacrylate), PAMA)	Phototriggered and phototunable swelling and pH , light responsive	Ref[124]
Silicon wafer		SI-ATRP	PNIPAAm-b-PS	Cell culture and protein adsorption.	Ref[125]
ITO		SI-KCTP	P3MT	Hole-transport layer	Ref[126]
Silicon wafer & Quartz		SIP	polyvinylcarbazole (PVK)	PLED device	Ref[127]
Au, Silicon wafer		SIP	POEGMA	Protein resistant or ‘‘non-fouling”	Ref[128]
Au-surface	Alkane thiol	SI-ATRP	poly(carboxybetaine acrylamide) (polyCBAA)	Specific protein detection	Ref[129]
Silicon wafer		self-initiated photografting and photopolymerization (SIPGP)	poly(2-methyl-2-oxazoline) and poly(2-ethyl-2-oxazoline)- (PMeOx2 and PMeOx4)	Protein adsorption and cell adhesion study	Ref[130]
Silicon wafer		SI-ATRP	Polyacrylamide (PAAm)	Microbial adhesion study	Ref[131]
silicon wafers & Quartz surface	3- (2-bromoiso butyroyl) amino propyltrimethoxy silane	SI-ATRP	Poly2-(dimethylamino)ethyl methacrylate (DMAEMA)	Permanent, non-leaching antibacterial surfaces	Ref[132]
Silicon wafer		ATRP	poly(3-sulfopropyl methacrylate)	To immobilize silver salt for antibacterial effect	Ref[133]
Au-surface		SI-ATRP	polycarboxybetaine methacrylate (PCBMA) Poly(sulfobetaine methacrylate) (poly SBMA) & poly(ethylene	Nonspecific protein adsorption	Ref[134]

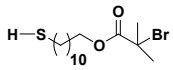
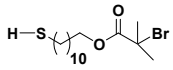
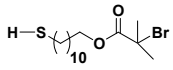
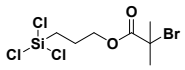
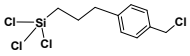
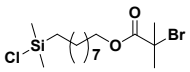
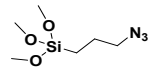
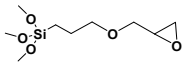
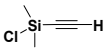
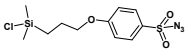
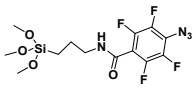
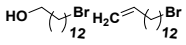
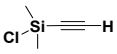
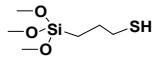
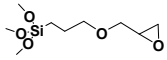
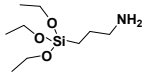
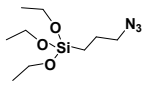
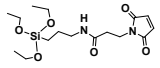
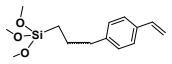
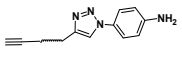
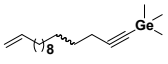
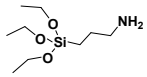
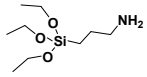
			glycolmethacrylate) (POEGMA)		
Au-surface		SI-ATRP	poly(sulfobetaine methacrylate) (polySBMA)-	Protein adsorption	Ref[135]
Au-surface		SI-ATRP	Homo & copolymer poly(carboxybetain e methacrylate), poly(sulfobetaine methacrylate), and poly(phosphorylch oline methacrylate). (poly(SBMA-b-CBMA))	Antifouling surfaces	Ref[136]
Au-surfaec		SI-ATRP	Polyacrylamide	Ultralow fouling	Ref[137]
Silicon wafer		ATRP	poly2-(2-methoxyethoxy)eth yl methacrylate (PMEO2MA), poly hydroxyl-terminated oligo(ethylene glycol) methacrylate (PHOEGMA)	Antibacterial and antifouling surface	Ref[138]
Silicon wafer		UV-irradiation	PMAA	Tunable biocatalytic activity	Ref[139]
Silicon wafer		SI-ATRP	poly(2-hydroxyethyl methacrylate-co-2-(methacryloyloxy)e thyl phosphate) (P(HEMA-co-MEP))	Osteoconductive	Ref[140]

TABLE S2. Surface functionalization with polymers by "graft to" methods

Surface (planar)	Molecules used to form SAM prior to polymerization	Polymerization technique	Polymer brush	Reactions performed for end-grafting of already prepared polymer to SAM	Application (demonstrated /perceived)	Reference
Silicon Oxide		catalyst-transfer polycondensation	P3HT	Click reaction	FET	Ref[141]
ITO		Commercial	poly(2-vinylpyridine) and polyacrylicacid)-(PVP &PAA)	Thermal condensation	-	Ref[142]
Au		Commercial	Poly(ethylene glycol) PEG	Ester-amine reaction	Cell-resistant surface	Ref[143]
Silicon surface	Thymine–diamidopyridine	Living Free Radical	Tri-DAP end-functionalized polystyrene	Hydrogen bonding	Stimuli responsive	Ref[144]
Silicon wafer		RAFT	Sodium polystyrene sulfonate (PSSNa)& poly(2-methacryloyloxyethyltrimethylammonium chloride) (PMETAC)	"Click" reaction	-	Ref[145]
Silicon wafer		Commercial & free radical Polymerization	PS, PAA, & PMMA PDMAA & poly(heptadecafluorodecyl acrylate) (PHFDA)	Thermal activation & Nitrene reaction	-	Ref[146]
Silicon wafer		-	PS	Photochemical immobilization & Nitrene reaction	-	Ref[147]
Silicon wafer	"	Commercial	PS	hv-irradiation & Nitrene reaction	-	Ref[148]
Silicon substrate	"	Commercial	Poly(2-ethyl-2-oxazoline) & polystyrene	Thermal activation & Nitrene reaction	-	Ref[149]
Silicon wafer	"	-	polypropylene or poly(ethylene-co propylene)	photolysis or thermolysis	-	Ref[150]

Silicon wafer	”	Commercial	poly(ethylene oxide) (PEO) & PS	hv-irradiation and Nitrene reaction	Antifouling surfaces	Ref[151]
Silicon wafer	”	Commercial	poly(2-ethyloxazoline) (PEOX),	hv-irradiation & nitrene reaction	-	Ref[152]
Silicon substrate		Anionic polymerization	polysilane	polysilane with a silyl anion	-	Ref[153]
Silicon wafer		NMRP & ATRP	PS-N_3, PMMA-N_3 & PEG-N_3	Click reaction	-	Ref[154]
Silicon wafer	”	Commercial	poly(ethylene glycol) (PEG)	Click reaction	-	Ref[155]
Silicon substrates		Suzuki−Miyaura coupling & Yamamoto coupling	Poly(fluorene)s & Styrene End-Capped Poly(fluorene)	Thiol− Ene Click Chemistry	Optoelectronics	Ref[156]
Silicon wafer		Atom free living polymerization & anionic polymerization	PS & P2VP	Thermal condenzation	Switching behavior (Solvent responsive)	Ref[157]
Silicon wafer	(3-glycidoxypropyl) trimethoxysilane	-	Polystyrene	Thermal condenzation	-	Ref[158]
Silicon wafer		Free radical co-polymerization	Poly[N,N-dimethylacrylamide-co-(4-phenylazophenyl acrylate)] (PDMAA).	Esterification	Temperature/Light Responsive	Ref[159]
Silicon wafer		-	(phosphorylcholine functionalized poly(trimethylene carbonate) (PC-PTMCPC)	Thermal aminolysis reaction	-	Ref[160]
Au - surface	2-aminoethanethiol	Radical polymerization (AIBN)	poly-N-isopropylacrylamide-ferrocene-oxirane	Epoxide-Amine reaction	Enzyme Activity	Ref[161]
Silicon wafer		Grignard Metathesis (GRIM)	Cp-end capped P3HT	Diels-Alder cycloaddition		Ref[162]

Silicon wafer		RAFT polymerization	poly(acrylic acid) (Si-PAA-phenylsulfonyl dithioformate (PSDTF)	Hetero Diels-Alder reaction (HDA)	Stimuli responsive surface (reversible pH-responsive)	Ref[163]
Silicon substrate		Commercial	PEG	Reductive amination	Antifouling surface (HSA & Lys)	Ref[164]
ITO		-	P4VP	-	Bioelectronic applications	Ref[165]
Silicon wafer , Au & Glass surface	3-Glycidyloxytrimethoxy silane	Commercial	Poly(2-ethyl-2-oxazoline) (PEOX) and PS	hv-irradiation & Nitrene reaction	Specific protein detection	Ref[166]
Silicon surface		-	AMP (N_3-IG-25) peptide	Click reaction	Antibacterial activity	Ref[167]
Glass		-	Cross-linked hyperbranched fluoropolymer (HBFP) and poly(ethylene glycol) (PEG)	Thermal condensation	Antifouling surface	Ref[168]
Silicon wafer		Commercial	PMAOD	-	Stretching and imaging of single-stranded DNA	Ref[169]

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