Supplementary material (ESI) for Journal of Materials Chemistry

Table 1: Polymersomes forming copolymers properties and applications

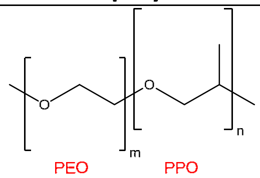
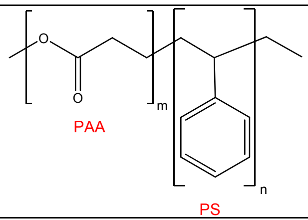
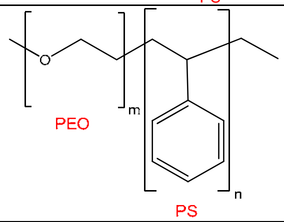
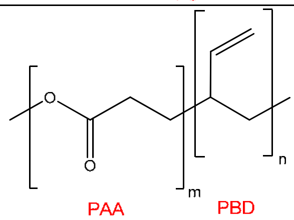
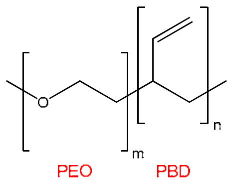
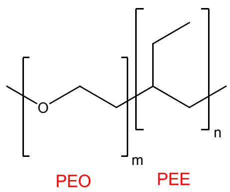
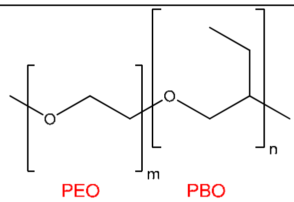
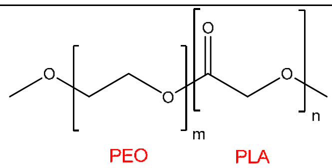
Copolymer		Properties	Applications
Poly(ethylene oxide)-Poly(propylene oxide)		Commercial availability, FDA approved[7]	None (limited stability)
Poly(acrylic acid)-polystyrene (PAA-PS)		Ability to form large compound vesicular aggregates[6,8,9]	Potential drug delivery vector
Poly(ethylene oxide)-polystyrene		Ability to form large compound vesicular aggregates[10]	Potential use in controlled release/ biomedical applications
Poly(acrylic acid)-polybutadiene		Ability to form large compound vesicular aggregates[11]	None reported
Poly(ethylene oxide)-Poly(butadiene)		Mechanical toughness, biological inertness, cross linkability	NIR imaging contrast agent
Poly(ethylene oxide)-Poly(ethyl ethylene)		Mechanical toughness, biological inertness[5,12]	Toughener for epoxy resins
Poly(ethylene oxide)-Poly(butylene oxide)		Selective permeability[13,14]	Drug delivery
Poly(ethylene oxide)-Poly(lactic acid)		Biodegradability[15]	Anticancer drug delivery

Table 1: cont.d

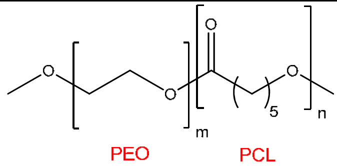
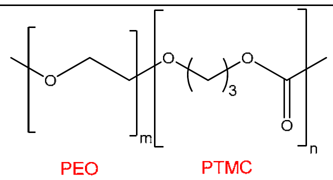
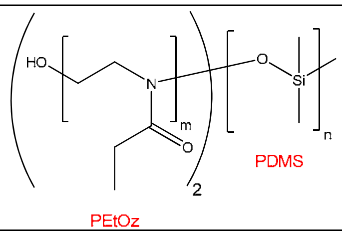
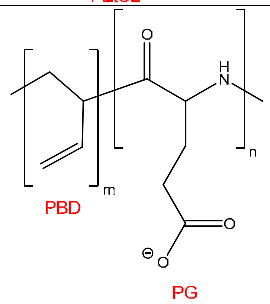
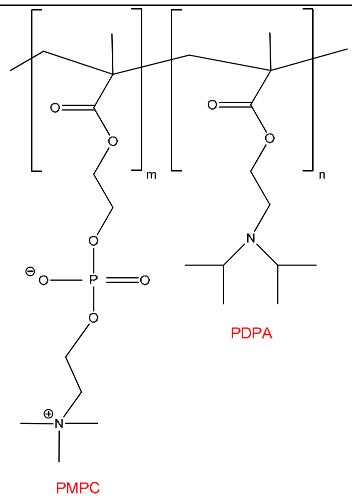
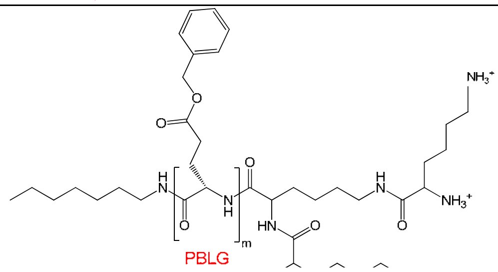
Copolymer		Properties	Applications
Poly(ethylene oxide)-Polycaprolactone		Biodegradability, slow release kinetics[15]	Anticancer drug delivery, delivery to the CNS
Poly(ethylene oxide)-Poly(trimethylene carbonate)		Biodegradability, temperature-sensitivity[15]	*In situ* gel production for drug delivery/ tissue engineering
Poly(2-ethyl-2-oxazoline)-poly(dimethylsiloxane)-poly(2-ethyl-2-oxazoline)		Ability to incorporate membrane proteins within polymersomal membrane[27]	"Artificial cell", nanoreactor
Polybutadiene-(poly-L-glutamate)		pH-sensitivity, ability to undergo helix-coil transitions without affecting polymersome morphology[16]	None reported
Poly(2-methacryloxyethyl phosphorylcholine)-poly(2-(diisopropylamino) ethyl methacrylate)		pH-sensitivity[17]	Gene and drug delivery
Poly(γ–benzyl-L-glutamate)-poly(L-lysine)		Dendrimer, α-helical conformation[35]	Modelling of proteins tertiary structures

Table 1: cont.d

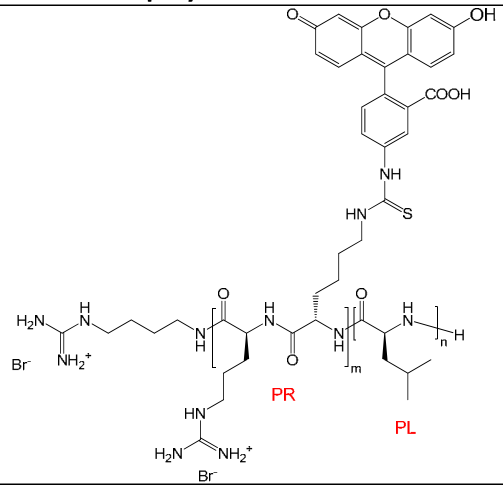
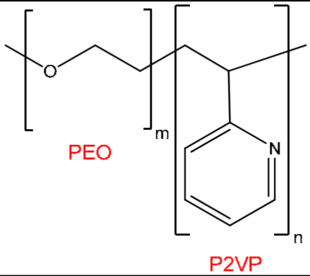
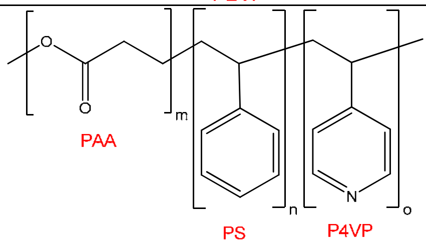
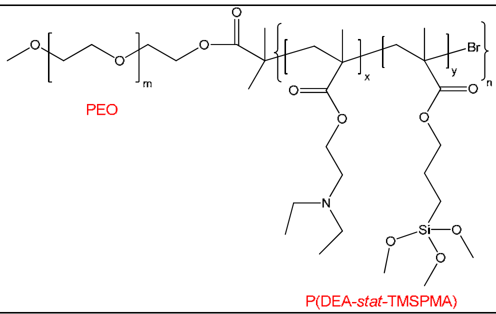
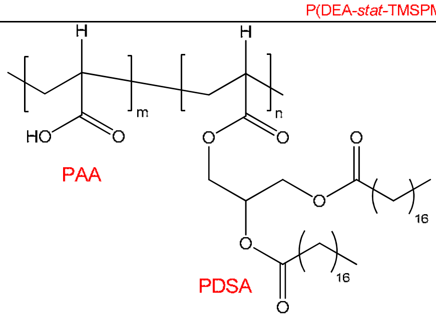
Copolymer		Properties	Applications
Poly(L-arginine)-poly(L-leucine)		pH sensitivity[18]	Drug delivery
Poly(2-vinylpyridine)-poly(ethylene oxide)		pH sensitivity[19]	Controlled release
Poly(acrylic acid)-polystyrene-poly(4-vinyl pyridine)		pH-dependent vesicle surface chemistry[20]	None reported
Poly(ethylene oxide)-poly(2-(diethylamino)ethyl methacrylate-*stat*-3-(trimethoxysilyl) propyl methacrylate)		pH-tunable membrane permeability, self-cross-linkablity[21]	Support for precious metal catalyst
Poly(acrylic acid)-poly(distearin acrylate)		pH-tunable membrane permeability, generation of multivesicle assemblies[22]	Controlled release, model for eukaryotic cells and their internal organelles

Table 1: cont.d

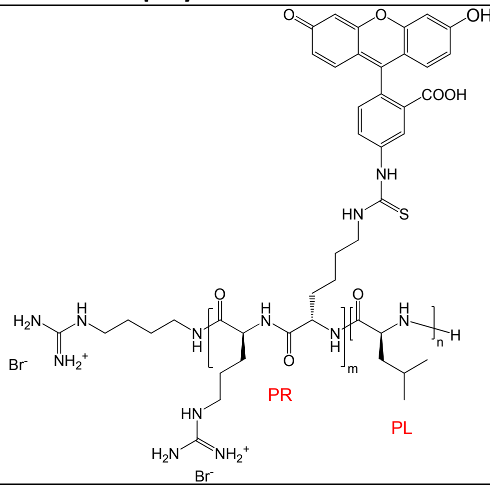
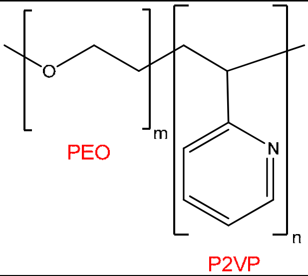
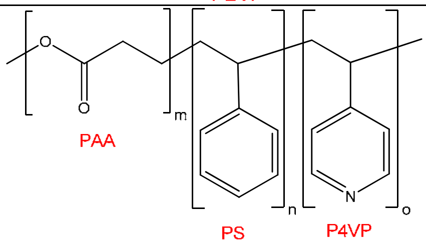
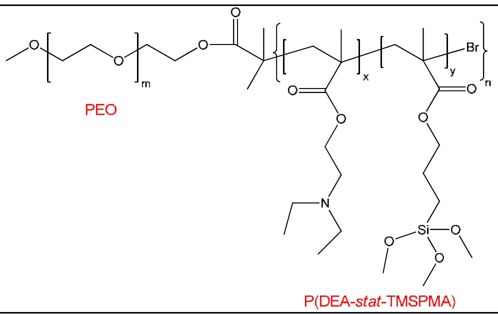
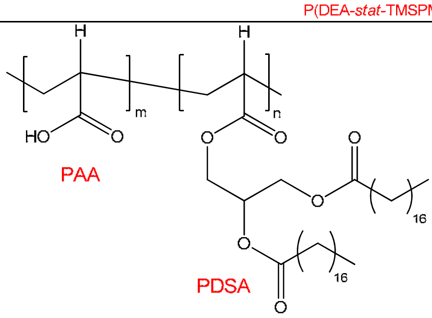
Copolymer		Properties	Applications
Poly(L-arginine)-poly(L-leucine)		pH sensitivity[18]	Drug delivery
Poly(2-vinylpyridine)-poly(ethylene oxide)		pH sensitivity[19]	Controlled release
Poly(acrylic acid)-polystyrene-poly(4-vinyl pyridine)		pH-dependent vesicle surface chemistry[20]	None reported
Poly(ethylene oxide)-poly(2-(diethylamino)ethyl methacrylate-*stat*-3-(trimethoxysilyl) propyl methacrylate)		pH-tunable membrane permeability, self-cross-linkablity[21]	Support for precious metal catalyst
Poly(acrylic acid)-poly(distearin acrylate)		pH-tunable membrane permeability, generation of multivesicle assemblies[22]	Controlled release, model for eukaryotic cells and their internal organelles

Table 1: cont.d

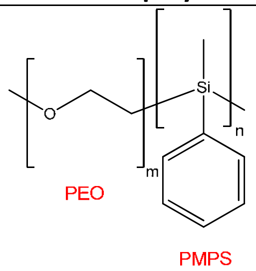
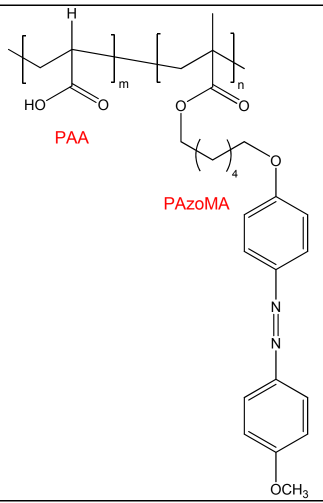
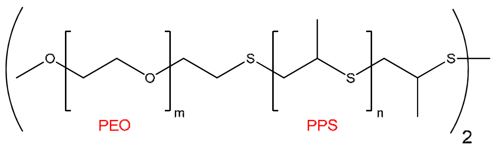
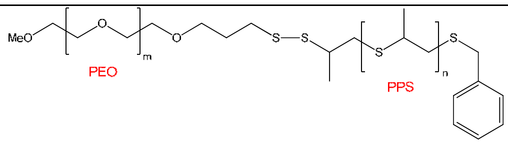
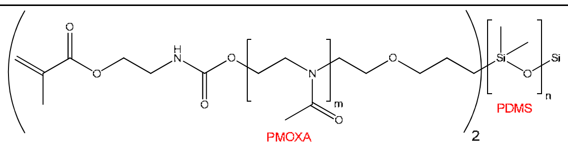
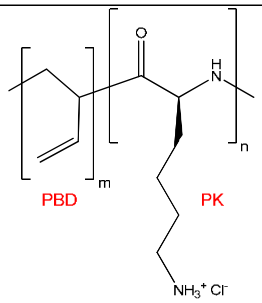
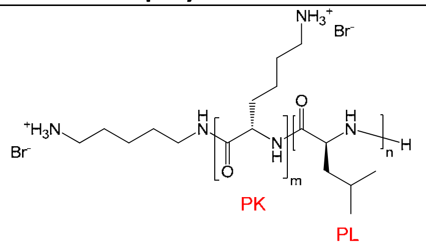
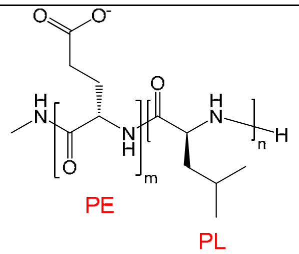
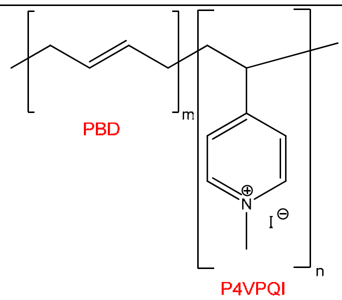
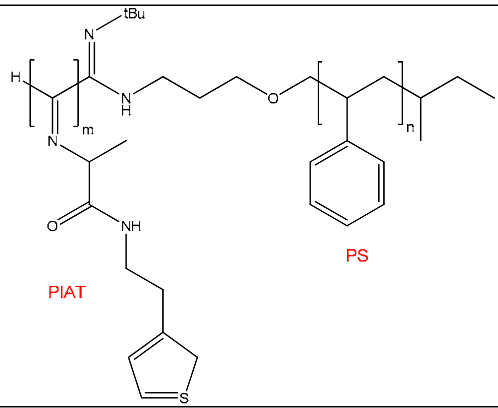
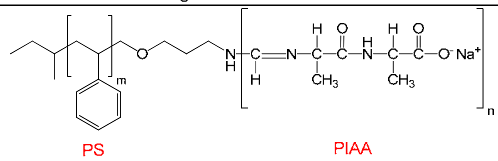
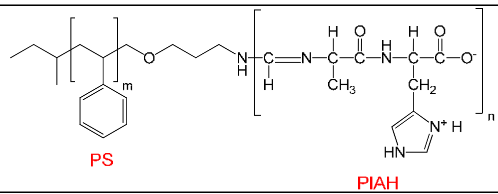
Copolymer		Properties	Applications
Poly(ethylene oxide)-poly(methylphenylsilane)		Sensitivity to UV light[23]	None reported
Azobenzene-containing poly(methacrylate)-poly(acrylic acid)		Sensitivity to UV light[23]	None reported
Poly(ethylene oxide)-poly(propylene sulphide)		Sensitivity to oxidation[24]	Oxidative species and glucose sensitive delivery
Poly(ethylene oxide)-SS-poly(propylene sulfide)		Sensitivity to reduction[25]	Drug delivery
Poly(2-methyloxazoline)–poly(dimethylsiloxane)–poly(2-methyloxazoline)		Ability to incorporate membrane proteins within polymersomal membrane[26]	Nanoreactor
Poly(butadiene)-poly(L-lysine)		Helical morphologies copolymer blocks[32-34]	Drug delivery

Table 1: cont.d

Copolymer		Properties	Applications
Poly(L-lysine)-poly(L-leucine)		Controllable vesicle diameter, degradability[29]	Mimicking tertiary structures of proteins
Poly(L-glutamic acid)-poly(L-leucine)		Controllable vesicle diameter, degradability, stability in presence of serum proteins[29]	None reported
Poly(butadiene)-poly(*N*-methyl-4-vinyl-pyridinium iodide)		Polymersomes formation through using a "single emulsion technique" [30]	DNA delivery
Polystyrene-poly(L-isocyanoalanine(2-thiophen-3-yl-ethyl)amide)		Selective permeability[28]	Nanoreactor
Polystyrene-poly(isocyano-L-alanine-L-alanine)		Helical morphologies copolymer blocks[32]	None reported
Polystyrene-poly(isocyano-L-alanine-L-histidine)		Helical morphologies copolymer blocks[32]	None reported