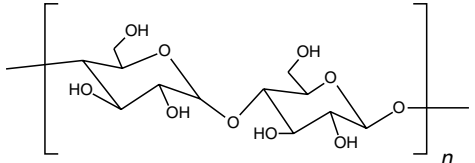
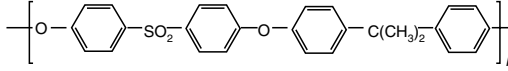
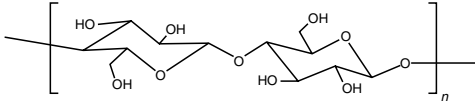
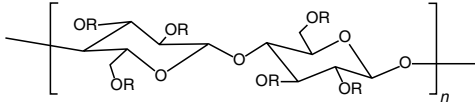
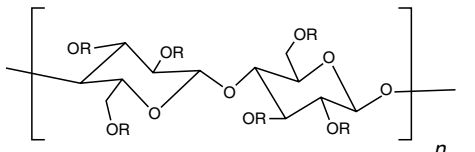


CHAPTER 2

Names, Acronyms, Classes, and Structures of Some Important Polymers

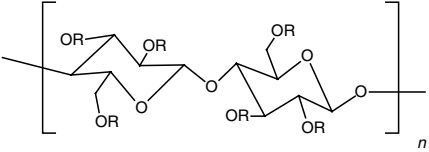
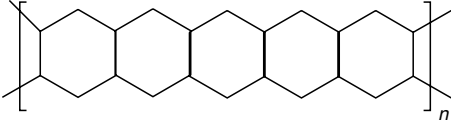
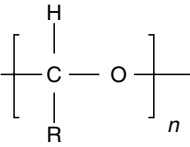
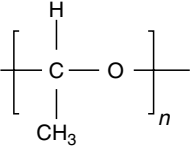
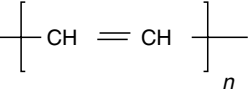
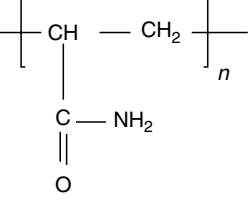
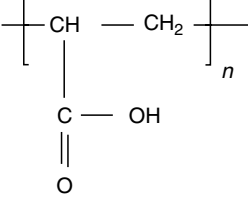
Chandima Kumudinie Jayasuriya* and Jagath K. Premachandra[†]

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Common name	Acronym, alternate name	Class	Structure of repeat unit
Amylose		Polysaccharide	
Bisphenol A polysulfone		Polysulfone	
Cellulose	Rayon, cellophane, regenerated cellulose	Polysaccharide	
Cellulose acetate	CA	Cellulose ester	 <p>R = -COCH₃</p>
Cellulose nitrate	CN	Cellulose ester	 <p>R = -NO₂</p>

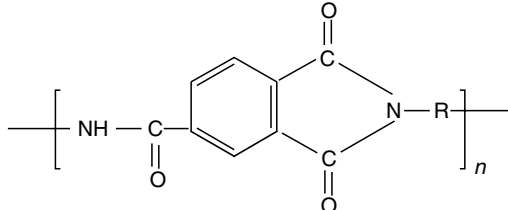
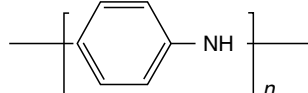
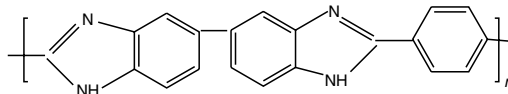
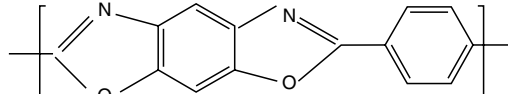
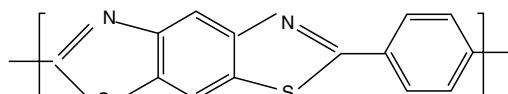
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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Hydroxypropyl cellulose	HPC	Cellulose ester	 $R = -(CH_2)_3-OH$
Ladder polymer	Double-strand polymer		
Polyacetal		Polyether	
Polyacetaldehyde		Polyether	
Polyacetylene		Polyalkyne	
Polyacrylamide		Vinyl polymer, acrylic polymer	
Poly(acrylic acid)		Vinyl polymer, acrylic polymer	

NAMES, ACRONYMS, CLASSES, AND STRUCTURES OF SOME IMPORTANT POLYMERS / 27

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Polyacrylonitrile	PAN	Vinyl polymer, acrylic polymer	$\left[\begin{array}{c} \text{CH} \\ \\ \text{CN} \end{array} - \text{CH}_2 \right]_n$
Poly(L-alanine)		Polypeptide	$\left[\text{NH} - \begin{array}{c} \text{CH} \\ \\ \text{CH}_3 \end{array} - \overset{\text{O}}{\parallel}{\text{C}} \right]_n$
Polyamide	Nylon	Polyamide	$\left[\text{NH} - \text{R} - \text{NH} - \overset{\text{O}}{\parallel}{\text{C}} - \text{R}' - \overset{\text{O}}{\parallel}{\text{C}} \right]_n$
Polyamide imide	PAI		
Polyaniline		Polyamine	
Polybenzimidazole	PBI	Polyheteroaromatic	
Polybenzobisoxazole	PBO	Polyheteroaromatic	
Polybenzobisthiazole	PBT	Polyheteroaromatic	

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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(γ -benzyl-L-glutamate)	PBLG	Polypeptide	$\left[\text{NH} - \underset{\begin{array}{c} \\ \text{O}=\text{C} - \text{O} - \text{CH}_2 - \text{C}_6\text{H}_5 \\ \\ (\text{CH}_2)_2 \end{array}}{\text{CH}} - \overset{\text{O}}{\parallel}{\text{C}} \right]_n$
1,2-Polybutadiene	PBD	Diene polymer	$\left[\underset{\begin{array}{c} \\ \text{CH} = \text{CH}_2 \end{array}}{\text{CH}} - \text{CH}_2 \right]_n$
<i>cis</i> -1,4-Polybutadiene	PBD	Diene polymer	$\left[\text{---} \underset{\text{H}}{\text{C}} = \underset{\text{H}}{\text{C}} \text{---} \right]_n$
<i>trans</i> -1,4-Polybutadiene	PBD	Diene polymer	$\left[\text{---} \underset{\text{H}}{\text{C}} = \underset{\text{H}}{\text{C}} \text{---} \right]_n$
Poly(1-butene)	PB-1	Polyolefin	$\left[\underset{\begin{array}{c} \\ \text{CH}_2\text{CH}_3 \end{array}}{\text{CH}} - \text{CH}_2 \right]_n$
Polybutylene terephthalate	PBT	Polyester	$\left[(\text{CH}_2)_4 - \text{O} - \overset{\text{O}}{\parallel}{\text{C}} - \text{C}_6\text{H}_4 - \overset{\text{O}}{\parallel}{\text{C}} \right]_n$
Poly(ϵ -caprolactam)	Nylon 6	Polyamide	$\left[\text{NH} - \overset{\text{O}}{\parallel}{\text{C}} - (\text{CH}_2)_5 \right]_n$
Poly(ϵ -caprolactone)		Polyester	$\left[\text{O} - \overset{\text{O}}{\parallel}{\text{C}} - (\text{CH}_2)_5 \right]_n$

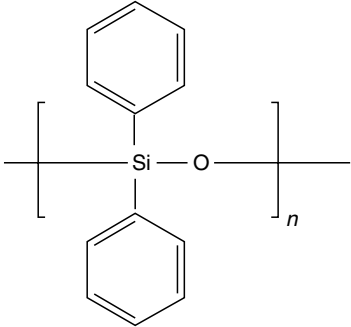
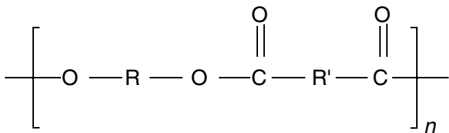
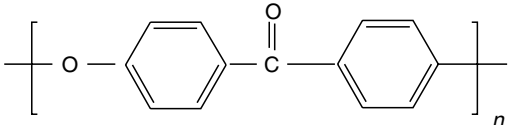
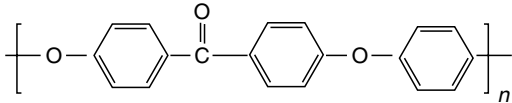
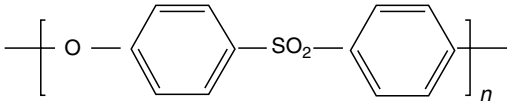
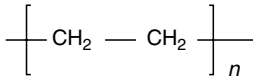
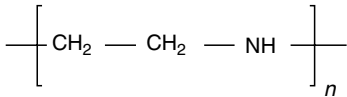
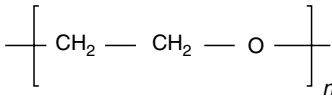
NAMES, ACRONYMS, CLASSES, AND STRUCTURES OF SOME IMPORTANT POLYMERS / 29

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Polycarbonate	PC	Polyester	
<i>cis</i> -1,4-Polychloroprene	Neoprene	Diene polymer	
<i>trans</i> -1,4-Polychloroprene	Neoprene	Diene polymer	
Polychlorotrifluoroethylene	PCTFE	Vinyl polymer, Fluoro polymer	
Poly(10-decanoate)		Polyester	
Poly(diethyl siloxane)	PDES	Polysiloxane	
Poly(dimethyl siloxane)	PDMS	Polysiloxane	

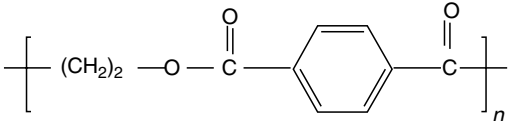
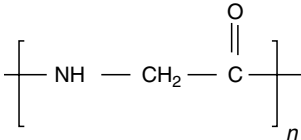
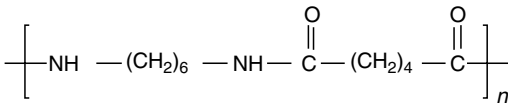
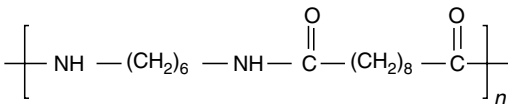
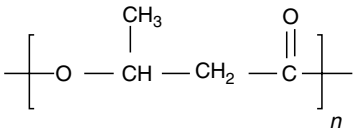
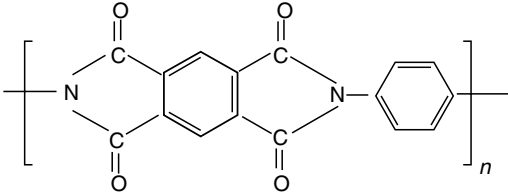
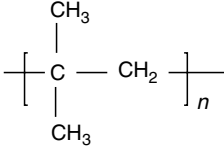
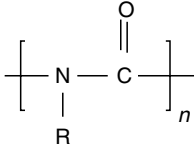
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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(diphenyl siloxane)	PDPS	Polysiloxane	
Polyester			
Polyether ketone	PEK	Polyketone	
Polyether etherketone	PEEK	Polyketone	
Polyether sulfone	PES		
Polyethylene	PE	Polyolefin	
Poly(ethylene imine)		Polyamine	
Poly(ethylene oxide) [Poly(ethylene glycol)]	PEO [PEG]	Polyether	

NAMES, ACRONYMS, CLASSES, AND STRUCTURES OF SOME IMPORTANT POLYMERS / 31

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(ethylene terephthalate)	PET	Polyester	
Polyglycine		Polypeptide	
Poly(hexamethylene adipamide)	Nylon 6,6	Polyamide	
Poly(hexamethylene sebacamide)	Nylon 6,10	Polyamide	
Polyhydroxybutyrate	PHB	Polyester	
Polyimide	PI	Polyimide	
Polyisobutylene	Butyl rubber	Vinylidene polymer	
Polyisocyanate	PIC	Polyamide	

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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Polyisocyanide		Polyisocyanide	$\left[\begin{array}{c} \text{N} - \text{R} \\ \\ - \text{C} - \end{array} \right]_n$
<i>cis</i> -1,4-Polyisoprene	<i>cis</i> -PIP, natural rubber	Diene polymer	$\left[\begin{array}{c} \text{---} \text{CH}_2 \text{---} \text{CH} = \text{CH} \text{---} \text{CH}_2 \text{---} \\ \quad \quad \\ \text{H} \quad \quad \text{CH}_3 \end{array} \right]_n$
<i>trans</i> -1,4-Polyisoprene	<i>trans</i> -PIP Gutta percha	Diene polymer	$\left[\begin{array}{c} \text{---} \text{CH}_2 \text{---} \text{CH} = \text{CH} \text{---} \text{CH}_2 \text{---} \\ \quad \quad \\ \text{H} \quad \quad \text{CH}_3 \end{array} \right]_n$
Polylactam		Polyamide	$\left[\text{NH} \text{---} (\text{CH}_2)_m \text{---} \text{C} \begin{array}{c} \text{O} \\ \end{array} \right]_n$
Polylactone		Polyester	$\left[\text{O} \text{---} \text{C} \begin{array}{c} \text{O} \\ \end{array} \text{---} (\text{CH}_2)_m \text{---} \right]_n$
Poly(methacrylic acid)		Vinyl polymer, acrylic polymer	$\left[\text{CH}_2 \text{---} \text{C} \begin{array}{c} \text{COOH} \\ \\ \text{CH}_3 \end{array} \right]_n$
Poly(methyl acrylate)	PMA	Vinyl polymer, acrylic polymer	$\left[\text{CH} \text{---} \text{CH}_2 \right]_n \begin{array}{c} \\ \text{C} \text{---} \text{O} \text{---} \text{CH}_3 \\ \\ \text{O} \end{array}$

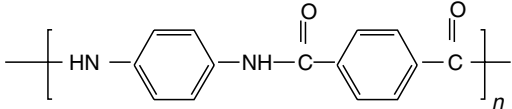
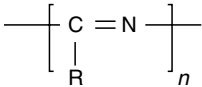
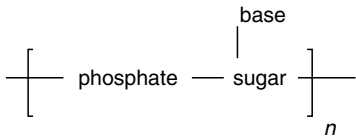
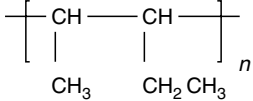
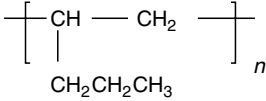
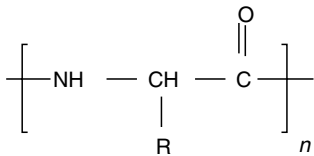
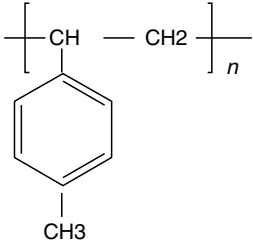
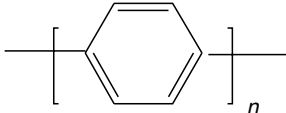
NAMES, ACRONYMS, CLASSES, AND STRUCTURES OF SOME IMPORTANT POLYMERS / 33

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(methyl methacrylate)	PMMA	Vinylidene polymer, acrylic polymer	$\left[\begin{array}{c} \text{CH}_3 \\ \\ \text{C} - \text{CH}_2 \\ \\ \text{C} - \text{O} - \text{CH}_3 \\ \\ \text{O} \end{array} \right]_n$
Poly(4-methyl pentene)		Polyolefin	$\left[\begin{array}{c} \text{CH}_2 - \text{CH} \\ \\ \text{CH}_2 \\ \\ \text{CH}(\text{CH}_3)_2 \end{array} \right]_n$
Poly(α -methyl styrene)		Vinylidene polymer	$\left[\begin{array}{c} \text{CH}_3 \\ \\ \text{C} - \text{CH}_2 \\ \\ \text{C}_6\text{H}_5 \end{array} \right]_n$
Poly(methylene oxide)	PMO Polyformaldehyde	Polyether	$\left[\text{CH}_2 - \text{O} \right]_n$
Poly(methyl phenyl siloxane)	PMPS	Polysiloxane	$\left[\begin{array}{c} \text{CH}_3 \\ \\ \text{Si} - \text{O} \\ \\ \text{C}_6\text{H}_5 \end{array} \right]_n$
Poly(<i>m</i> -phenylene terephthalamide)	Nomex	Polyaramid	$\left[\text{HN} - \text{C}_6\text{H}_4 - \text{NH} - \text{C}(=\text{O}) - \text{C}_6\text{H}_4 - \text{C}(=\text{O}) \right]_n$

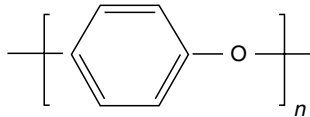
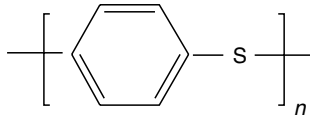
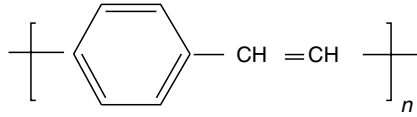
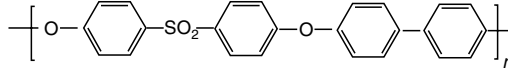
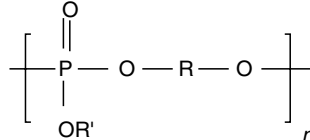
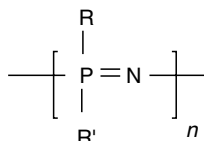
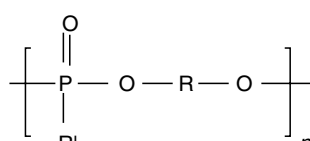
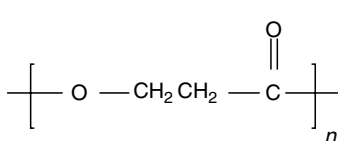
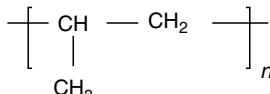
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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(<i>p</i> -phenylene terephthalamide)	Kevlar	Polyaramid	
Polynitrile		Polyimine	
Polynucleotide		Polynucleotide	
Poly(<i>n</i> -pentene-2)		Poly(α-olefin)	
Poly(<i>n</i> -pentene-1)	Poly (1-pentene)	Poly(α-olefin)	
Polypeptides [Poly(α-amino acid)]		Polypeptide	
Poly(<i>p</i> -methyl styrene)		Vinyl polymer	
Poly(<i>p</i> -phenylene)	PP	Polyaromatic	

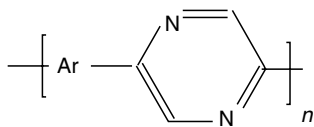
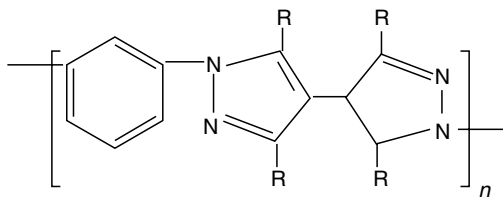
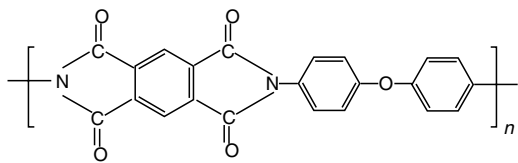
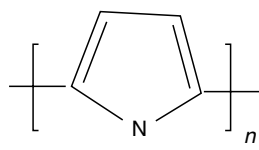
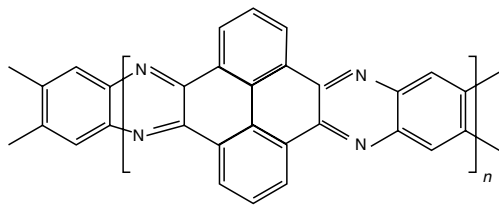
NAMES, ACRONYMS, CLASSES, AND STRUCTURES OF SOME IMPORTANT POLYMERS / 35

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(<i>p</i> -phenylene oxide)	PPO	Polyether	
Poly(<i>p</i> -phenylene sulfide)	PPS	Polysulfide	
Poly(<i>p</i> -phenylene vinylene)		Polyaromatic	
Polyphenylsulfone		Polysulfone	
Polyphosphate		Inorganic polymer	
Polyphosphazene		Inorganic polymer	
Polyphosphonate		Inorganic polymer	
Poly(3-propionate)	Poly(β- propiolactone)	Polyester	
Polypropylene	PP	Poly(α-olefin)	

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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(propylene glycol)	PPG	Polyether	$\text{HOCHCH}_2 \left[\text{O} - \text{CH}_2 - \text{CH} \right]_n \text{OH}$ <p style="text-align: center;">$\text{CH}_3 \qquad \qquad \qquad \text{CH}_3$</p>
Poly(propylene oxide)	PPO	Polyether	$\left[\text{CH} - \text{CH}_2 - \text{O} \right]_n$ <p style="text-align: center;">CH_3</p>
Polypyrazine		Heterocyclic polymer	
Polypyrazole		Heterocyclic polymer	
Poly(pyromellitimide-1,4-diphenyl ether)	Kapton	Polyimide	
Polypyrrole		Heterocyclic polymer	
Polyquinoxaline		Heterocyclic polymer	
Polysilane		Inorganic polymer	$\left[\text{Si} \right]_n$ <p style="text-align: center;">$\text{R} \qquad \text{R}'$</p>

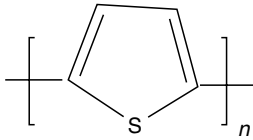
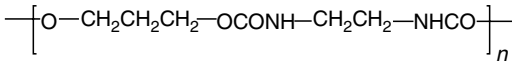
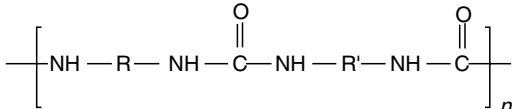
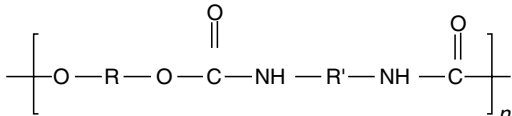
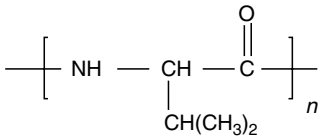
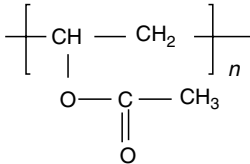
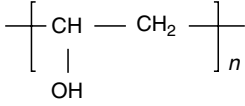
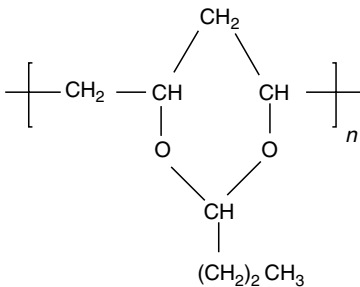
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Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Polysilazane		Inorganic polymer	$\left[\begin{array}{c} \text{R} \\ \\ \text{---Si---N---} \\ \quad \\ \text{R}' \quad \text{R}'' \end{array} \right]_n$
Polysiloxane	Silicone	Inorganic polymer	$\left[\begin{array}{c} \text{R} \\ \\ \text{---Si---O---} \\ \\ \text{R}' \end{array} \right]_n$
Polystyrene	PS, styrofoam	Vinyl polymer	$\left[\begin{array}{c} \text{CH} \\ \\ \text{---CH}_2\text{---} \\ \\ \text{C}_6\text{H}_5 \end{array} \right]_n$
Polysulfide	Thiokol	Polysulfide	$\left[\text{---R---S}_m\text{---} \right]_n$
Polysulfur		Polysulfur	$\left[\text{---S---} \right]_n$
Polytetrafluoroethylene	PTFE, Teflon	Poly(α -olefin)	$\left[\begin{array}{c} \text{F} \quad \text{F} \\ \quad \\ \text{---C---C---} \\ \quad \\ \text{F} \quad \text{F} \end{array} \right]_n$
Poly(tetramethylene oxide)	PTMO	Polyether	$\left[\text{CH}_2\text{---CH}_2\text{---CH}_2\text{---CH}_2\text{---O} \right]_n$
Polythiazyl			$\left[\text{---S=N---} \right]_n$
Polythienyl vinylene			$\left[\begin{array}{c} \text{---} \text{C}_4\text{H}_3\text{S} \text{---} \text{CH=CH} \text{---} \end{array} \right]_n$

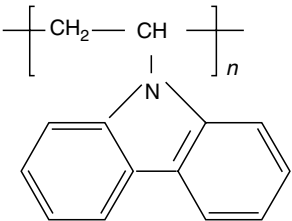
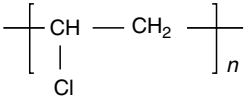
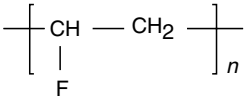
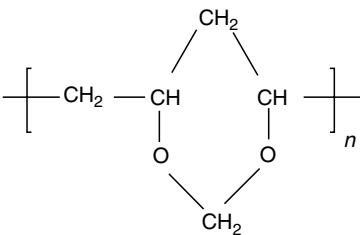
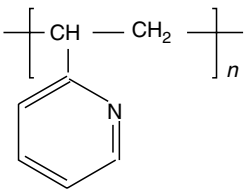
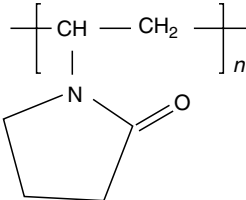
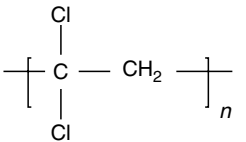
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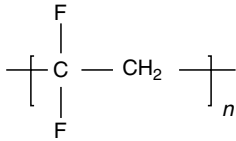
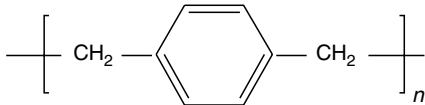
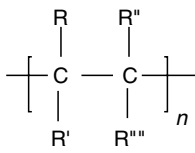
Common name	Acronym, alternate name	Class	Structure of repeat unit
Polythiophene		Polyheterocyclic	
Poly(trimethylene ethylene urethane)			
Polyurea		Polyurea	
Polyurethane	Adiprene	Polyurethane	
Poly(L-valine)		Polypeptide	
Poly(vinyl acetate)	PVAc	Vinyl polymer	
Poly(vinyl alcohol)	PVA	Vinyl polymer	
Poly(vinyl butyral)	PVB	Vinyl polymer	

NAMES, ACRONYMS, CLASSES, AND STRUCTURES OF SOME IMPORTANT POLYMERS / 39

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(vinyl carbazole)			
Poly(vinyl chloride)	PVC	Vinyl polymer	
Poly(vinyl fluoride)	PVF	Vinyl polymer, fluoro polymer	
Poly(vinyl formal)		Vinyl polymer	
Poly(2-vinyl pyridine)	PVP	Vinyl polymer	
Poly(<i>N</i> -vinyl pyrrolidone)		Vinyl polymer	
Poly(vinylidene chloride)	PVDC	Vinylidene polymer	

Continued.

Common name	Acronym, alternate name	Class	Structure of repeat unit
Poly(vinylidene fluoride)	PVDF	Vinylidene polymer	
Poly(<i>p</i> -xylylene)			
Vinyl polymer		Vinyl polymer	

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