

## List of keywords for polymer science (IUPAC Technical Report)

Stanislaw Slomkowski, Christopher Fellows, Roger C. Hiorns, Richard Jones, Przemyslaw Kubisa, Christine Luscombe, Tamaki Nakano, Gregory Russell, Claudio dos Santos, Carmen Scholz, et al.

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## IUPAC Technical Report

Stanislaw Slomkowski\*, Christopher M. Fellows, Roger C. Hiorns, Richard G. Jones, Przemyslaw Kubisa, Christine K. Luscombe, Tamaki Nakano, Gregory T. Russell, Claudio G. dos Santos, Carmen Scholz, Natalie Stingelin and Michael G. Walter

# List of keywords for polymer science (IUPAC Technical Report)

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**Abstract:** This paper provides a list of the most important terms from all areas of polymer science including polymer chemistry, polymer physics, polymer technology and polymer properties. These have been assembled into a representative list of terms that serves as an IUPAC recommended list of keywords for polymer science.

**Keywords:** IUPAC; keyword; polymer science.

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## 1 Introduction

Internet searches of scientific literature return results based mainly on electronic engines, which work to identify relevant keywords. These keywords are supplied by the authors of publications. The selection of keywords that best describe the content of a publication is therefore very important. Some publishers of journals related to polymer science provide a recommended list of keywords from which authors must select the most relevant terms. Wiley, for example does this [1]. Some publishers, on the other hand, give authors license to provide their own keywords, while others provide a non-binding list of keywords, *i.e.* authors may use it or ignore it as they prefer. In addition to these variations, different authors place a different emphasis on the selection of keywords. Some take it as a serious exercise and strive to provide keywords that genuinely encapsulate the contents of their article, while others regard keywords as a nuisance and do not particularly care if they are a “low precision” guide to the content of their publication. Furthermore, as science is a dynamic discipline, newly discovered phenomena are constantly giving rise to new terms that may not be included in existing lists of keywords. All these factors introduce a degree of ambiguity which, in turn, makes searching the literature by keywords less accurate.

For these reasons it is worthwhile to collect the most salient terms from all areas of polymer science, *i.e.* polymer chemistry, polymer physics, polymer technology, and polymer properties, and then to assemble these terms into a representative list that may serve as an IUPAC-recommended list of keywords for polymer science. This is the aim of this paper. Ideally, all polymer-related journals would employ this list and would insist on authors selecting from it, except where terms are newly coined, in which event – if prudent – they would be added to the list, making it an evolving document. This would ultimately result in a streamlined search tool: faster, more comprehensive, and more accurate.

The following list was created by a task-group of the IUPAC Polymer Division, which collected the most relevant terms, identified on the basis of:

- a. terms from IUPAC Polymer Division recommendations given in the IUPAC Compendium of Polymer Terminology and Nomenclature (the “Purple Book”) [2];
- b. lists of keywords for Wiley journals [1] (*J. Polym. Sci. A Polym. Chem.* [3], *J. Polym. Sci. B Polym. Phys.* [4], *J. Appl. Polym. Sci.* [5], *Polym. Int.* [6], *Macromol. Chem. Phys.* [7]);
- c. titles of chapters and sections in the *Encyclopedia of Polymer Science and Technology* [8], *Comprehensive Polymer Science* [9], *Ullmann’s Encyclopedia of Industrial Chemistry* [10];
- d. terms that appeared as keywords in the most cited (usually more than 500 citations) polymer-related papers (on the basis of ISI Web of Knowledge [11]);
- e. terms that appeared as keywords in publications in *Prog. Polym. Sci.* [12] in the period 2008–2015; and
- f. terms from the *Polymer Science Dictionary* [13].

The list was divided into six categories and entries were arranged alphabetically within them, with categories for keywords related to: polymer synthesis and polymerization mechanisms; reactions of polymers; polymer class names and common polymer names; polymer additives and composites; polymer structure, processing, properties and applications; and polymer characterization methods. In addition, the complete alphabetical list is included at the end of this paper. Where appropriate, authors may choose to insert their own polymer-specific keyword. This should be done in accord with recent IUPAC nomenclature recommendations [14, 15].

The generation of new keywords was avoided where possible in order to avoid confusion; however, where new keywords are required, it is recommended that they conform to definitions given in the IUPAC Compendium of Polymer Terminology and Nomenclature (the “Purple Book”). The spellings of American English are recommended as these are more commonly used, and for searching efficiency it is obviously preferable if workers adhere to the forms of a particular variant of English. It is also recommended that the singular form be used.

## 2 List of keywords arranged into categories

### 2.1 Keywords related to polymer synthesis and polymerization mechanisms

activated monomer

activation energy

activator generated by electron transfer atom transfer radical polymerization (AGET-ATRP)

activator regenerated by electron transfer atom transfer radical polymerization (ARGET-ATRP)

acyclic diene metathesis polymerization (ADMET)

anionic polymerization

anionic ring-opening polymerization

asymmetric polymerization

atom transfer radical polymerization (ATRP)

branching

bulk polymerization

catalyst

catalyst transfer polymerization (CTP)

cationic polymerization

cationic ring-opening polymerization

chain polymerization

chain scission

chain transfer

click reaction

cobalt-mediated radical polymerization

condensative chain polymerization (CCP)

controlled anionic polymerization

controlled cationic polymerization

controlled ionic polymerization

controlled polymerization

controlled radical polymerization (CRP)

convergent approach

coordination polymer

coordination polymerization

coordination ring-opening polymerization

copolymerization

coupling

crosslinking

cyclization

degenerative chain transfer radical polymerization

degradation

degree of polymerization

depolymerization

dispersion polymerization

divergent approach

electrochemical polymerization  
emulsion polymerization  
enzymatic polymerization  
equilibrium polymerization

functional polymer  
functionality

gas-phase polymerization  
gel effect  
gel point  
gelation  
grafting  
grafting from  
grafting through  
grafting to  
group transfer polymerization (GTP)

heat of polymerization  
heterogeneous polymerization  
homogeneous polymerization

inclusion  
inhibitor  
initiation of polymerization  
intercalation  
interfacial polymerization  
iodine-transfer polymerization (ITP)  
ionic liquid  
ionic polymerization  
irradiation

kinetics  
Kumada catalyst transfer polymerization (KCTP)

ligand  
living anionic polymerization  
living cationic polymerization  
living coordination polymerization  
living ionic polymerization  
living polymer  
living polymerization

macroinitiator  
macromonomer  
mechanism  
metal-free catalyst  
metallocene catalyst  
metathesis polymerization

microemulsion polymerization  
miniemulsion polymerization  
molar mass  
molar mass dispersity

nitroxide mediated polymerization

olefin polymerization catalyst  
organobismuthine-mediated radical polymerization (BIRP)  
organometallic-mediated radical polymerization (OMRP)  
organostibane-mediated radical polymerization (SBRP)  
organotellurium-mediated radical polymerization (TERP)  
oxidative polymerization

photoinitiated polymerization  
photopolymerization  
plasma polymerization  
polyaddition  
polycondensation  
post-metallocene catalyst  
precipitation polymerization  
prepolymer  
propagation  
pseudo-ionic polymerization

quantum chemistry

radiation polymerization  
radical polymerization  
rate of polymerization  
reactive injection molding  
reactivity ratio (in copolymerization)  
reverse atom transfer radical polymerization (reverse ATRP)  
reverse iodine-transfer polymerization (RITP)  
reversible-addition-fragmentation chain-transfer polymerization (RAFT)  
reversible addition-fragmentation radical polymerization (RAFRP)  
reversible deactivation anionic polymerization (RDAP)  
reversible deactivation cationic polymerization (RDCP)  
reversible deactivation coordination polymerization (RDCP)  
reversible deactivation ionic polymerization (RDIP)  
reversible deactivation polymerization (RDP)  
reversible deactivation radical polymerization (RDRP)  
reversible polymerization  
ring-opening metathesis polymerization (ROMP)  
ring-opening polymerization

sequential polymerization  
sol-gel  
solid-phase synthesis  
solid-state polymerization

solution polymerization  
stable radical mediated polymerization  
stereospecific polymerization  
surface-initiated polymerization  
suspension polymerization

telomerization  
template  
template polymerization  
termination  
thermodynamics  
thiocarbonyl-mediated radical polymerization (TMRP)  
transition-metal-mediated radical polymerization

Ziegler-Natta catalyst  
Ziegler-Natta polymerization

## 2.2 Keywords related to reactions of polymers

aminolysis

biodegradation

chemical modification  
composting  
conjugate  
conjugation

degradation

enzymatic degradation

functionalization

hydrolysis

metabolization  
modification  
molecular recognition

oxidation

PEGylation  
photodegradation  
post-polymerization functionalization  
pyrolysis

reactive processing  
recycling

thermal degradation  
tissue engineering

vulcanization

### 2.3 Keywords related to polymer class names and common polymer names

acrylic polymer  
aliphatic polyester  
aromatic polyester  
alternating copolymer  
amphiphilic polymer  
aramid

biomaterial  
biomedical polymer  
biopolymer

carbohydrate  
cellulose  
chitin  
chitosan  
collagen  
copolymer  
cyclodextrin

dendrimer  
dendritic polymer  
dextran

epoxy

fluoropolymer

gelatin  
graphene

hydrophilic polymer  
hydrophobic polymer  
hyperbranched polymer

inorganic polymer  
ion-exchange polymer  
ionic polymer  
ionomer

ladder

metal-containing  
metal-organic  
nanocomposite



natural rubber

nylon

oligomer

organic-inorganic hybrid material

polyacetylene

polyacrylate

polyacrylamide

polyacrylonitrile

polyamide

polyaniline

polycarbonate

polyelectrolyte

polyester

poly(ester amide)

polyether

polyethylene

polyfluorene

polyhydroxyalkanoate

polyimide

polyisobutylene

polylactide

polymer electrolyte

polymethacrylate

polyolefin

poly(oxirane)

polyphenylene

poly(phenylene diamine)

poly(phenylene vinylene)

polyphosphazene

polypropylene

polypyrrole

polyrotaxane

polysaccharide

polysilane

polysiloxane

polystyrene

polythiophene

polyurea

polyurethane

poly(vinyl alcohol)

poly(vinyl chloride)

poly(vinyl ether)

preceramic polymer

protein

random copolymer

reinforced polymer

renewable resource

responsive polymer  
rubber

semiconducting polymer  
shape memory polymer  
silicon polymer  
silsesquioxane  
smart polymer  
star polymer  
starch  
statistical copolymer  
superabsorbent polymer  
supramolecular polymer

thermoplastic elastomer  
thermoplastic polymer  
thermoset  
thermosetting polymer

unsaturated polyester

water soluble polymer

## 2.4 Keywords related to polymer additives and composites

acid neutralizer  
additive  
adhesion promotor  
adhesive  
alumina  
anti-blocking agent  
anti-fogging agent  
anti-microbial additive  
antioxidant  
antistatic agent

blowing agent

carbon black  
carbon fiber  
carbon nanotube  
catalyst deactivator  
catalyst quencher  
clay  
colorant  
compatibilizer  
coupling agent  
crosslinking agent

defoaming agent  
degradation promoter  
dispersing agent  
drug  
dye

filler  
flame retardant  
foaming agent  
fullerene

glass fiber  
graphene  
graphene oxide

heat stabilizer

impact modifier

light stabilizer  
lubricant

mold release agent  
montmorillonite

nanotube  
nucleation agent

optical brightener

pigment  
plasticizer  
processing aid

reinforcement

scavenger  
stabilizer  
surfactant

## 2.5 Keywords related to polymer structure, processing, properties and applications

ablation  
adhesion  
adsorbent  
adsorption  
aggregate  
aggregation  
aging

alpha transition  
amorphous polymer  
anisotropy  
annealing  
aspect ratio  
association  
atactic

barrier property  
beta transition  
bioadhesion  
biocompatible polymer  
biodegradable polymer  
biological application  
biomedical application  
biomimetic polymer  
birefringence  
blend  
block copolymer  
branched polymer  
brittle  
brush  
bulk-heterojunction (BHJ)

casting  
cellular  
charge transfer  
charge transport  
chiral  
coating  
coil  
colloid  
comb  
compatibility  
composite  
compost  
compression  
conducting polymer  
configuration  
conformation  
controlled release  
conjugated polymer  
core-shell  
crack  
craze  
crazing  
creep  
critical solution temperature  
crosslink  
crystal structure

crystallinity  
crystallization  
curing  
cyclic

damping  
density  
diblock copolymer  
dielectric property  
diffusion  
dispersity  
drug delivery  
ductility  
durability  
dynamic-mechanical property

elasticity  
elasticity modulus  
elastomer  
electrical property  
electroactive polymer  
electrospinning  
elongation  
encapsulation  
engineering polymer  
entanglements  
environmental corrosion  
etching  
excluded volume  
extended chain  
extrusion

fatigue  
ferroelectric  
fiber  
film  
fire (flame) retardancy  
flexural strength  
fluorescence  
fluorescent polymer  
flocculation  
flow  
foam  
fracture  
free volume  
friction  
fuel cell

gas permeation  
gel (polymer gel)

glass transition  
glass transition temperature  
graft

hardness  
high-performance  
hybrid nanocomposite  
hybrid polymeric material  
hydrodynamic radius  
hydrogel  
hydrophile  
hydrophilicity  
hydrophobe  
hydrophobicity  
hysteresis

impact resistant  
impact strength  
implant  
injectable hydrogel  
injection molding  
interface  
intermolecular cohesion  
interpenetrating network  
interphase  
ionic conductivity  
isotactic

lamellar  
Langmuir-Blodgett film  
latex  
lattice  
layer  
layer growth  
light-emitting property  
liquid crystal polymer  
liquid-crystalline polymer  
lithography  
loss modulus  
lower critical solution temperature (LCST)  
luminescence

macrocycle  
magnetic  
mechanical property  
melt  
membrane  
metallopolymer  
micelle  
microstructure

miscibility  
mixed binary brush  
mixing  
modulus  
molding  
molecular dynamics  
molecularly imprinted polymer  
monolayer  
morphology

nanofiber  
nanofiller  
nanofilm  
nanogel  
nanoparticle  
nanostructure  
network  
non-linear optical property  
nucleation

optical anisotropy  
optical property  
optical activity  
organic electronics  
organic field-effect transistor (OFET)  
organic light-emitting diode (OLED)  
organic photovoltaics (OPVs)  
orientation

$\pi$ -conjugated polymer

permanent network  
pharmacological application  
phase behavior  
phase separation  
phase transition  
phosphorescence  
photoactive polymer  
photonic crystal  
photoresist  
photosensitive polymer  
photovoltaic application  
piezoelectric  
polarization  
polyanion  
polycation  
polymer brush  
polymer film  
polymer light emitting diode (PLED)  
polymer melt

polymer solar cell  
polymeric membrane  
polymeric microsphere  
polymeric scaffold  
polymersome  
pressure-sensitive adhesive  
processing

radius of gyration  
reactive extrusion  
refractive index  
relaxation  
reptation  
rheology  
rigid  
rubber elasticity

scratch resistance  
segmented copolymer  
self-assembly  
semicrystalline  
shear  
sol-gel transition  
solubility  
spin coating  
stabilization  
stiffness  
storage modulus  
strain  
strain recovery  
stress  
stress-strain  
surface modification  
surface property  
syndiotactic  
swelling  
swelling pressure

temporary network  
tensile strength  
thermal property  
thermal stability  
thermal transition  
thermomechanical property  
thermo-responsiveness  
theta condition  
toughness  
transport property

upper critical solution temperature (UCST)



vesicle  
viscoelastic property  
viscosity

wear  
weathering

yield strength (yielding)  
Young modulus

## 2.6 Keywords related to polymer characterization methods

atomic force microscopy (AFM)

calorimetry  
capillary electrophoresis  
chemical corrosion  
chromatography  
circular dichroism (CD)  
cloud point determination  
computer simulation  
conductometry  
cyclic voltammetry (CV)

degree of swelling  
dielectric spectroscopy  
differential scanning calorimetry (DSC)  
differential thermal analysis (DTA)  
dilatometry  
dynamic light scattering (DLS)  
dynamic-mechanical analysis (DMA)  
dynamic-mechanical thermal analysis (DMTA)

electron diffraction  
electron paramagnetic spin resonance (EPR or ESR)  
electrophoresis  
electrospray ionization (ESI)

field-flow fractionation (FFF)  
fourier transform infrared (FTIR) spectroscopy  
fractionation  
fracture analysis

gel permeation chromatography (GPC)

impact resistance  
impact test  
implant testing  
infrared (IR) spectroscopy

light scattering

mass spectrometry  
matrix assisted laser desorption/ionization (MALDI)  
microindentation  
modeling  
molar mass dispersity  
molar mass distribution  
Monte Carlo simulation  
multi-angle laser light scattering (MALLS)  
multidimensional nuclear magnetic resonance (NMR) spectroscopy

nanoindentation  
near edge X-ray absorption fine structure (NEXAFS) spectroscopy  
near infrared (NIR) spectroscopy  
neutron scattering  
nuclear magnetic resonance (NMR)

optical rotation  
osmometry

polarimetry  
porosimetry  
potentiometry

Raman spectroscopy

scanning electron microscopy (SEM)  
size exclusion chromatography (SEC)  
small angle neutron scattering (SANS)  
small angle X-ray scattering (SAXS)  
solid-state nuclear magnetic resonance (SS-NMR)  
spectropolarimetry  
static light scattering (SLS)

test method  
thermal analysis  
thermogravimetric analysis  
tomography  
transmission electron spectroscopy (TEM)

ultracentrifugation  
UV spectroscopy

viscometry

wide angle X-ray scattering (WAXS)

X-ray diffraction (XRD)  
X-ray photoelectron spectroscopy (XPS)  
X-ray spectroscopy

### 3 Alphabetical list of keywords

ablation  
acid neutralizer  
acrylic polymer  
activated monomer  
activation energy  
activator generated by electron transfer atom transfer radical polymerization (AGET-ATRP)  
activator regenerated by electron transfer atom transfer radical polymerization (ARGET-ATRP)  
acyclic diene metathesis polymerization (ADMET)  
additive  
adhesion  
adhesion promotor  
adhesive  
adsorbent  
adsorption  
aggregate  
aggregation  
aging  
aliphatic poliester  
alpha transition  
alternating copolymer  
alumina  
aminolysis  
amorphous polymer  
amphiphilic polymer  
anionic polymerization  
anionic ring-opening polymerization  
anisotropy  
annealing  
anti-blocking agent  
anti-fogging agent  
anti-microbial additive  
antioxidant  
antistatic agent  
aramid  
aromatic polyester  
aspect ratio  
association  
asymmetric polymerization  
atactic  
atom transfer radical polymerization (ATRP)  
atomic force microscopy (AFM)

barrier property  
beta transition  
bioadhesion  
biocompatible polymer  
biodegradable polymer  
biodegradation

biological application  
biomaterial  
biomedical application  
biomedical polymer  
biomimetic polymer  
biopolymer  
birefringence  
blend  
block copolymer  
blowing agent  
branched polymer  
branching  
brittle  
brush  
bulk polymerization  
bulk-heterojunction (BHJ)

calorimetry  
capillary electrophoresis  
carbohydrate  
carbon black  
carbon fiber  
carbon nanotube  
casting  
catalyst  
catalyst deactivator  
catalyst quencher  
catalyst transfer polymerization (CTP)  
cationic polymerization  
cationic ring-opening polymerization  
cellular  
cellulose  
chain polymerization  
chain scission  
chain transfer  
charge transfer  
charge transport  
chemical corrosion  
chemical modification  
chiral  
chitin  
chitosan  
chromatography  
circular dichroism (CD)  
clay  
click reaction  
cloud point determination  
coating  
cobalt-mediated radical polymerization  
coil

collagen  
colloid  
colorant  
comb  
compatibility  
compatibilizer  
composite  
compost  
composting  
compression  
computer simulation  
condensative chain polymerization (CCP)  
conducting polymer  
conductometry  
configuration  
conformation  
conjugate  
conjugated polymer  
conjugation  
controlled anionic polymerization  
controlled cationic polymerization  
controlled ionic polymerization  
controlled polymerization  
controlled radical polymerization (CRP)  
controlled release  
convergent approach  
coordination polymer  
coordination polymerization  
coordination ring-opening polymerization  
copolymer  
copolymerization  
core-shell  
coupling  
coupling agent  
crazing  
creep  
critical solution temperature  
crosslink  
crosslinking  
crosslinking agent  
crystal structure  
crystallinity  
crystallization  
curing  
cyclic  
cyclic voltammetry (CV)  
cyclization  
cyclodextrin  
  
damping  
defoaming agent

degenerative chain transfer radical polymerization  
degradation  
degradation promoter  
degree of polymerization  
degree of swelling  
dendrimer  
dendritic polymer  
density  
depolymerization  
dextran  
diblock copolymer  
dielectric property  
dielectric spectroscopy  
differential scanning calorimetry (DSC)  
differential thermal analysis (DTA)  
diffusion  
dilatometry  
dispersing agent  
dispersion polymerization  
dispersity  
divergent approach  
drug  
drug delivery  
ductility  
durability  
dye  
dynamic light scattering (DLS)  
dynamic-mechanical analysis (DMA)  
dynamic-mechanical property  
dynamic-mechanical thermal analysis (DMTA)

elasticity  
elasticity modulus  
elastomer  
electrical property  
electroactive polymer  
electrochemical polymerization  
electron diffraction  
electron paramagnetic spin resonance (EPR or ESR)  
electrophoresis  
electrospinning  
electrospray ionization (ESI)  
elongation  
emulsion polymerization  
encapsulation  
engineering polymer  
entanglements  
environmental corrosion  
enzymatic degradation  
enzymatic polymerization

epoxy  
equilibrium polymerization  
etching  
excluded volume  
extended chain  
extrusion

fatigue  
ferroelectric  
fiber  
field-flow fractionation (FFF)  
filler  
film  
fire (flame) retardancy  
flame retardant  
flexural strength  
flocculation  
flow  
fluorescence  
fluorescent polymer  
fluoropolymer  
foam  
foaming agent  
fourier transform infrared (FTIR) spectroscopy  
fractionation  
fracture  
fracture analysis  
free volume  
friction  
fuel cell  
fullerene  
functional polymer  
functionality  
functionalization

gas permeation  
gas-phase polymerization  
gel (polymer gel)  
gel effect  
gel permeation chromatography (GPC)  
gel point  
gelatin  
gelation  
glass fiber  
glass transition  
glass transition temperature  
graft  
grafting  
grafting from  
grafting through

grafting to  
graphene  
graphene oxide  
group transfer polymerization (GTP)

hardness  
heat of polymerization  
heat stabilizer  
heterogeneous polymerization  
high-performance  
homogeneous polymerization  
hybrid nanocomposite  
hybrid polymeric material  
hydrodynamic radius  
hydrogel  
hydrolysis  
hydrophile  
hydrophilic polymer  
hydrophilicity  
hydrophobe  
hydrophobic polymer  
hydrophobicity  
hyperbranched  
hysteresis

impact modifier  
impact resistance  
impact resistant  
impact strength  
impact test  
implant  
implant testing  
inclusion  
infrared (IR) spectroscopy  
inhibitor  
initiation of polymerization  
injectable hydrogel  
injection molding  
inorganic polymer  
intercalation  
interface  
interfacial polymerization  
intermolecular cohesion  
interpenetrating network  
interphase  
iodine-transfer polymerization (ITP)  
ion-exchange polymer  
ionic conductivity  
ionic liquid  
ionic polymer



ionic polymerization

ionomer

irradiation

isotactic

kinetics

Kumada catalyst transfer polymerization (KCTP)

ladder

lamellar

Langmuir-Blodgett film

latex

lattice

layer

layer growth

ligand

light scattering

light-emitting property

light stabilizer

liquid crystal polymer

liquid-crystalline polymer

lithography

living anionic polymerization

living cationic polymerization

living coordination polymerization

living ionic polymerization

living polymer

living polymerization

loss modulus

lower critical solution temperature (LCST)

lubricant

luminescence

macrocycle

macroinitiator

macromonomer

magnetic

mass spectrometry

matrix assisted laser desorption/ionization (MALDI)

mechanical property

mechanism

melt

membrane

metabolization

metal-containing

metal-free catalyst

metal-organic

metallocene catalyst

metallopolymer

metathesis polymerization  
micelle  
microemulsion polymerization  
microindentation  
microstructure  
miniemulsion polymerization  
miscibility  
mixed binary brush  
mixing  
modeling  
modification  
modulus  
molar mass  
molar mass dispersity  
molar mass distribution  
mold release agent  
molding  
molecular dynamics  
molecular recognition  
molecularly imprinted polymer  
monolayer  
Monte Carlo simulation  
montmorillonite  
morphology  
multi-angle laser light scattering (MALLS)  
multidimensional nuclear magnetic resonance (NMR) spectroscopy

nanocomposite  
nanofiber  
nanofiller  
nanofoam  
nanogel  
nanoindentation  
nanoparticle  
nanostructure  
nanotube  
natural rubber  
near edge X-ray absorption fine structure (NEXAFS) spectroscopy  
near infrared (NIR) spectroscopy  
network  
neutron scattering  
nitroxide mediated polymerization  
non-linear optical property  
nuclear magnetic resonance (NMR)  
nucleation  
nucleation agent  
nylon

olefin polymerization catalyst  
oligomer

optical anisotropy  
optical brightener  
optical property  
optical rotation  
organic electronics  
organic field-effect transistor (OFET)  
organic light-emitting diode (OLED)  
organic photovoltaics (OPVs)  
organic-inorganic hybrid material  
organobismuthine-mediated radical polymerization (BIRP)  
organometallic-mediated radical polymerization (OMRP)  
organostibane-mediated radical polymerization (SBRP)  
organotellurium-mediated radical polymerization (TERP)  
orientation  
osmometry  
oxidation  
oxidative polymerization

$\pi$ -conjugated polymer

PEGylation  
permanent network  
phase behavior  
phase separation  
phase transition  
phosphorescence  
photoactive polymer  
photodegradation  
photoinitiated polymerization  
photonic crystal  
photopolymerization  
photoresist  
photosensitive polymer  
photovoltaic application  
piezoelectric  
pigment  
plasma polymerization  
plasticizer  
polyacetylene  
polyacrylamide  
polarimetry  
polarization  
polyacrylate  
polyacrylonitrile  
polyaddition  
polyamide  
polyaniline  
polyanion  
polycarbonate  
polycation

polycondensation  
polyelectrolyte  
polyester  
poly(ester amide)  
polyether  
polyethylene  
poly(oxirane)  
polyfluorene  
polyhydroxyalkanoate  
polyimide  
polyisobutylene  
polylactide  
polymer brush  
polymer electrolyte  
polymer film  
polymer light emitting diode (PLED)  
polymer melt  
polymer solar cell  
polymeric membrane  
polymeric microsphere  
polymeric scaffold  
polymersome  
polymethacrylate  
polyolefin  
polyphenylene  
poly(phenylene diamine)  
poly(phenylene vinylene)  
polyphosphazene  
polypropylene  
polypyrrole  
polyrotaxane  
polysaccharide  
polysilane  
polysiloxane  
polystyrene  
polythiophene  
polyurea  
polyurethane  
poly(vinyl alcohol)  
poly(vinyl chloride)  
poly(vinyl ether)  
porosimetry  
post-metallocene catalyst  
post-polymerization functionalization  
potentiometry  
preceramic polymer  
precipitation polymerization  
prepolymer  
pressure-sensitive adhesive  
processing

processing aid  
propagation  
protein  
pseudo-ionic polymerization  
pyrolysis

quantum chemistry

radiation polymerization  
radical polymerization  
radius of gyration  
Raman spectroscopy  
random copolymer  
rate of polymerization  
reactive extrusion  
reactive injection molding  
reactive processing  
reactivity ratio (in copolymerization)  
recycling  
refractive index  
reinforcement  
reinforced polymer  
relaxation  
renewable resource  
reptation  
responsive polymer  
reverse atom transfer radical polymerization (reverse ATRP)  
reverse iodine-transfer polymerization (RITP)  
reversible addition-fragmentation chain-transfer polymerization (RAFT)  
reversible addition-fragmentation radical polymerization (RAFRP)  
reversible deactivation anionic polymerization (RDAP)  
reversible deactivation cationic polymerization (RDCP)  
reversible deactivation coordination polymerization (RDCP)  
reversible deactivation ionic polymerization (RDIP)  
reversible deactivation polymerization (RDP)  
reversible deactivation radical polymerization (RDRP)  
reversible polymerization  
rheology  
rigid  
ring-opening metathesis polymerization (ROMP)  
ring-opening polymerization  
rubber  
rubber elasticity

scanning electron microscopy (SEM)  
scavenger  
scratch resistance  
segmented copolymer  
self-assembly  
semiconducting polymer

semicrystalline  
sequential polymerization  
shape memory polymer  
shear  
silicon polymer  
silsesquioxane  
size exclusion chromatography (SEC)  
small angle neutron scattering (SANS)  
small angle X-ray scattering (SAXS)  
smart polymer  
sol-gel transition  
solid-phase synthesis  
solid-state nuclear magnetic resonance (SS-NMR)  
solid-state polymerization  
solubility  
solution polymerization  
spectropolarimetry  
spin coating  
stabilization  
stabilizer  
stable radical mediated polymerization  
star polymer  
starch  
static light scattering (SLS)  
statistical copolymer  
stereospecific polymerization  
stiffness  
storage modulus  
strain  
strain recovery  
stress  
stress-strain  
superabsorbent polymer  
supramolecular polymer  
surface-initiated polymerization  
surface modification  
surface property  
surfactant  
suspension polymerization  
swelling  
swelling pressure

telomerization  
template  
template polymerization  
tensile strength  
termination  
test method  
thermal analysis  
thermal degradation

thermal property  
thermal stability  
thermal transition  
thermomechanical property  
thermo-responsiveness  
thermodynamics  
thermogravimetric analysis  
thermoplastic elastomer  
thermoset  
thermosetting polymer  
theta condition  
thiocarbonyl-mediated radical polymerization (TMRP)  
tissue engineering  
tomography  
toughness  
transition-metal-mediated radical polymerization  
transmission electron spectroscopy (TEM)  
transport property

ultracentrifugation  
unsaturated polyester  
upper critical solution temperature (UCST)  
UV spectroscopy

vesicle  
viscoelastic property  
viscometry  
viscosity  
vulcanization

water soluble polymer  
wear  
weathering  
wide angle X-ray scattering (WAXS)

X-ray diffraction (XRD)  
X-ray photoelectron spectroscopy (XPS)  
X-ray spectroscopy

yield strength (yielding)  
Young modulus

Ziegler-Natta catalyst  
Ziegler-Natta polymerization

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