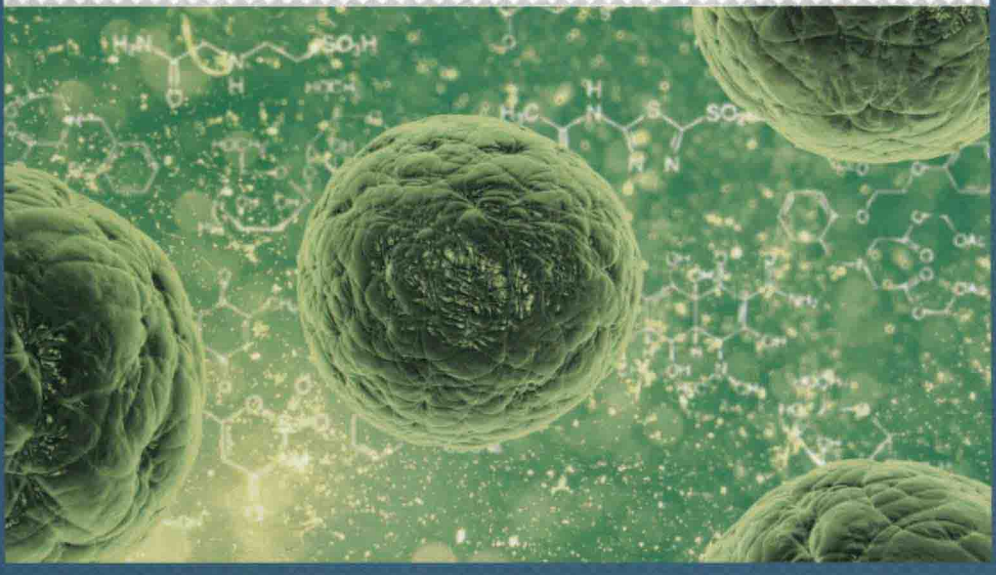
Volume 2

Physical Chemistry Research for Engineering and Applied Sciences

Polymeric Materials and Processing



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PHYSICAL CHEMISTRY RESEARCH FOR ENGINEERING AND APPLIED SCIENCES

VOLUME 2

Polymeric Materials and Processing

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LIST OF ABBREVIATIONS

AFM	Atomic Force Microscopy
AP	Aromatic Polyesters
CNT	Carbon Nanotubes
CTZ	Polysaccharide Chitosan
DCV- GCMD	Dual-Volume GCMD
DM	Dibenzothiazole Disulphide
DP	Diamond Pore
DSC	Differential Scanning Calorimetry
EB	Electron Beam
ER	Epoxy Resin
F	Flexible
FG	Fiber Glass
GCMD	Grand Canonical Molecular Dynamics
HR	Heat Radiation
HTS	High Temperature Shearing
IUPAC	International Union of Pure and Applied Chemistry
LDPE	Low Density Polyethylene
LQPS	Liquid-Crystal Polyesters
MC	Monte Carlo
MD	Molecular Dynamics
MF	Microfiltration
MSD	Mean-Square Displacement
MWCO	Molecular Weight Cut-Off
MWNT	Multi-Walled Carbon Nanotube
NBR	Acrylonitrile-Butadiene Rubber
NCN	National Science Centre Poland
NF	Nanofiltration
NR	Natural Rubber
OIT	Oxidation Induction Time
OOT	Oxidation Onset Temperature
PEG	Polyethylene Glycols
PFR	Phenoloformaldehyde Resin
PMS	Polymethyl-Silsesquioxane
PP	Polypropylene
PUE	Polyurethane Elastomers

R	Rigid
RESPA	Reference System Propagator Algorithm
RHR	Rate of Heat Release
RO	Reverse Osmosis
ROA	Rheometrics Optical Analyzer
SALS	Small Angle Light Scattering
SBR	Styrene-Butadiene Rubber
SE	Secondary Electron Signal
SEM	Scanning Electron Microscope
SFE	Surface Free Energy
SP	Straight Path
SWNT	Single-Walled Carbon Nanotube
TPES	Thermoplastic Elastomers
TS	Tensile Strength
UF	Ultrafiltration
US	Ultrasound
VACF	Velocity Autocorrelation Function
ZP	Zigzag Path

LIST OF SYMBOLS

α_0	amplitude of the initial disturbance
α_B	amplitude of the instability
$\overline{u}$	average molecular speed
$A_{m's}$	coefficients of the Fourier expansion
P_S^*	constant
$c_{j\sigma}^+$	creation operators of electrons
t_Δ	electron hopping integral
$\varepsilon_{l\sigma}$	energy of the electron by the impurity
$c_{j\sigma}$	Fermi annihilation
$f_s(\mathbf{p},\mathbf{r})$	Fermi distribution function
f_A	fugacity
V_{lj}	matrix element of hybridization
ξ_i	random numbers generated for each trial
C_h^*	saturation constant
D_A^*	self-diffusion coefficient
Γ	surface tension
η_m	viscosity of the matrix material
A	proportionality constant
a_1 and a_2	unit vectors
aq	energy barrier
B	hole affinity constant
$c\,(x)$	concentration
c_A	concentration of diffusant A
D	pore diameter
e_1, e_2 and e_3	coordinates in the current configuration
eV	electron energy
F	applied external force
G_1, G_2	material coordinates of a point in the initial configuration
J	molecular flux
K	temperature dependent Henry's law coefficient
K_n	Knudsen number
K_0	proportionality constant
K_P	henry's law constant
L	membrane thickness
M	molecular mass

m_{sample}	sample weight
M_{η}	molecular weight
N	number of carbon atoms in the lattice
n	quantization number
Na	the number of molecules
N_{imp}	number of adsorbed hydrogen atoms
P	permeability
p_x	parallel component of the graphene sheet
Q	heat of adsorption
R	radius of the modeled SWCNT
R_0	initial radius of the undisturbed fibril
r_p	pore radius
S	solubility coefficient
T	thickness of the adsorbate film
T_0	constants depending on some quantum mechanical values
T_{melt}	melting point of polyamide
U	constant of the Coulomb repulsion
V	center-of-mass velocity component
V	hybridization potential
V'', V'	volumes of polysaccharide
V_L	molecular volume of the condensate
X	position across the membrane
Γ	interfacial tension
Δp	pressure drop across the membrane
ΔS	entropy change
ΔH	fusion heat
Θ	time-lag
Λ	mean free path of molecules
$\rho(x)$	an arbitrary probability distribution function
ρ'', ρ'	density of polysaccharide
T	pore tortuosity
Ω	known function of the viscosity ratio