Handbook of Research on Functional Materials

Principles, Capabilities, and Limitations

Editors

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Georges Geuskens, PhD

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Gennady E. Zaikov, DSc, and A. K. Haghi, PhD

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HANDBOOK OF RESEARCH ON FUNCTIONAL MATERIALS

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LIST OF ABBREVIATIONS

ACA	amino caproic acid
ANN	artificial neural network
ANOVA	analysis of variance
BSA	bovine serum albumin
CA	contact angle
CCD	central composite design
CHEC	cold-hardened epoxy composition
CHT	chitosan
CMC	cell membrane complex
CME	clathrin-mediated endocytosis
CNTs	carbon nanotubess
CvME	caveolae-mediated endocytosis
DCM	dichloromethane
DLS	dynamic light scattering
DSSC	dye-sensitized solar cells
EBID	electron-beam-induced deposition
ED	electron diffraction
EDS	energy dispersive spectroscopy
EMD	electron microdiffraction
ER	epoxy resin
ERM	effective reinforcing modulus
EWG	electron-withdrawing groups
HDPE	high-density polyethylene
LMC	low-molecular compound
MFD	mean fiber diameter
MNPs	magnetic nanoparticles
MNSs	magnetically targeted nanosystems
MWCNT	multiwalled carbon nanotube
MWNTs	multiwalled nanotubes
NPT	isothermal–isobaric
NVE	microcanonical
NVT	canonical
PAN	polyacrylonitrile
PCA	polycaproamide
PEO	polyethylene oxide

PEPA	polyethylene polyamine
PVA	polyvinyl alcohol
RDP	radial density profile
RES	reticuloendothelial system
RME	receptor-mediated endocytosis
RMSE	root mean square errors
RSM	response surface methodology
RVE	representative volume element
RVP	radial velocity profile
SAD	selected-area diffraction
SEM	scanning electron microscope
SLN	solid lipid nanoparticles
STM	scanning tunneling
SUSHI	Simulation Utilities for Soft and Hard Interfaces
SWCN	single walled carbon nanotube
SWNTs	single walled nanotubes
TDGL	time-dependent Ginsburg–Landau
TEM	transmission electron microscopy
TFA	triflouroacetic acid
TG	thermogravimetric
μVT	grand canonical

LIST OF SYMBOLS

x_i and x_j	independent variables
a	temperature conductivity coefficient
d	dimension of Euclidean space
D	optical density
F	work angle constant
Y	is the predicted response

GREEK VARIABLES

h	sample thickness
l_0	length of the main chain skeletal bond
M_e	molecular weight of polymer chain
N_A	Avogadro number
R_s	sample heat resistance
S	cross-sectional area of macromolecule
S	sample area
c	heat capacity
η	dynamic viscosity
κ	sphere constant according to the test certificate
λ	wavelength
ν	Poisson's ratio
ρ	density
ρ_1	sphere density according to the test certificate
ρ_2	sample density
r_p	polymer density
s_Y	the temperature dependence of yield stress
τ	sphere movement time
j_{cl}	relative fraction of local order domains (nanoclusters)
χ	a relative fraction of elastically deformed polymer