Progress in POLYMER MATERIALS SCIENCE

Research, Development and Applications

Gennady E. Zaikov, DSc
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Editors

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List of Abbreviations

NOMENCLATURES

Ef = Fabric modulus in warp direction (N/mm^2)
Ey = Modulus of opposed yarn (N/tex)
Eyf=Modified modulus of opposed yarn (N/tex)
F = Pullout force (N)
FS = Static friction force (N)
FD = Dynamic friction force (N)
F = Normalized pullout force per number of crossovers (N)
FN = Normal load at each crossover (N)
N = Number of crossovers in direction of the pulled yarn
M = Number of crossovers in opposite direction of the pulled yarn
Tf = Lateral force in fabric length direction (N)
Ty = Force propagated in the opposed yarn direction (N)
Tyf = Corrected force propagated in the opposed yarn direction (N)
H = Fabric height before pulling (mm)
h′ = Fabric height after pulling (mm)
L = Fabric length before pulling (mm)
L′ = Fabric length after pulling (mm)
p = Distance between two crossovers in opposed direction before pulling (mm)
p′ = Distance between two crossovers in opposed direction during yarn pulling (mm)
t = Fabric thickness before pulling (mm)
t′ = Fabric thickness after pulling (mm)
x = Length of yarns between two crossovers in opposed direction before pulling (mm)
x′ = Length of yarns between two crossovers in opposed direction during pulling (mm)
V = Sample volume before pulling (mm3)
V′ = Sample volume during pulling (mm3)
α = Fabric deformation angle
Δ = Displacement of fabric in the direction of pulled yarn
ΔS = Static displacement of fabric in the direction of pulled yarn
ΔD = Dynamic displacement of the fabric in the direction of the pulled yarn
εy = Yarn strain between two crossovers in opposed yarn direction (lateral strain)
μ = Yarn-to-yarn friction coefficient
ρ = Linear density of the opposed yarn (tex)
θ = Weave angle in the opposed direction, before pulling
θ' = Weave angle in the opposed direction, during pulling
Subscript S = Defines the parameters in maximum static situation
Subscript D = Defines the parameters in dynamic situations

AA	Acrylamide
ACN	Acetonitrile
AFD	Average fiber diameter
AH	1-aminohexane
AIBN	Azoisobutyronitrile
AlA	Allylacrylate
AN	Acrylonitrile
ANOVA	Analysis of variance
AO	Antioxidants
AOEM	Acryloxyethylmaleate
APS	Ammonium persulfate
ASSSC	Aqueous solution of sodium sulfocyanide
BA	Butylacrylate
BAS	Biological active substances
BDA	4,4′-bitetracarboxylic dianhydride
BET	Brunauer-emmett-teller
BP	Benzoyl peroxide
BTDA	4,4′-benzophenone tetracarboxylic dianhydride
CA	Contact angle
CCD	Central composite design
CHT	Chitosan
CTC	Charge transfer complexes
DGEBA	Diglycide ether of bisphenol-A
DMAc	*N*,*N*-Dimethylacetamide
DMF	N-N, dimethylformamide
DMFA	Dimethyl formamide
DPPF	1,1'-bis(diphenylphosphino)ferrocene
EA	Ethylacrylate
EPG	Electrophotographic
ER O2	Oxygen electroreduction
FAMEs	Fatty acid methyl esters
FATD	Field assisted thermo dissociation
FPU	Foam polyurethane
GA	Gallic acid
GC-MS	Chromato-mass-spectrometry
HEPA	High efficiency particulate air
HMDA	Hexamethylenediamine
HQ	Hydroquinone
IA	Itaconic acid
IP	Ion pairs
IS	Stearates of iron
ITO	Indium tin oxide,
IW	Insufficient watering
LPO	Lipid peroxidation
MA	Methylacrylate

MAA	Methacrylic acid
MAS	Methallyl sulfonate
MF	Melaphen
MFE	Mercury film electrode
MMA	Methylmethacrylate
NMP	N-methyl-2-pyrrolidinone
ODPA	4,4′-oxydiphthalic anhydride
PAA	polyacrylamide
PAN	Polyacrylonitrile
PES	Photoelectric sensitivity
PI	Polyimides
PLA	Polylacticacid
PSC	Photostimulated current
RCR	Respiratory control rate
RFBR	Russian Foundation of Basic Researches
RH	Relative humidity
ROS	Reactive oxygen species
RSM	Response surface methodology
SEM	Scanning electron microscope
SSD	Supersmall doses
SOD	Superoxide dismutase
TCQM	Tetracyanoquinodimethane
VA	Vinylacetate
VA-grams	Voltammograms
XRD	X-ray powder diffraction
ΔON	Octane number

Preface

This book, with chapters by the editors and other experts in the field of polymer science, covers a broad selection of important research advances in the field, including an update on photoelectric characteristics, a study on the changes in the polymer molecular mass during hydrolysis, an update on enzymatic destruction, a study on a new type of bioadditive for motor fuel, an exploration of the interrelation of viscoelastic and electromagnetic properties of densely cross-linked polymers, and much more.

We carefully selected papers on many important topics, such as a paper that offers practical hints on the recovery of strain electromagnetic susceptibility relaxation, a numerical approach to the susceptibility of cross-linked polymers, an update on cross-linked polymers with nanoscale cross-site chains, a paper addressing the role of polymers in technologies and environment protection, an update on quantum-chemical calculation, and a paper that covers some aspects of silver nanoparticles. Also included are chapters that discuss the problems of mechanics of textile performance, new aspects of polymeric nanofibers, a mathematical model of nanofragment cross-linked polymers, and much more.

Editors and contributors hope that you will find the information provided here enlightening and useful, and we will be happy to receive from readers their comments and insights that may be helpful to us in our future research.

— Gennady E. Zaikov, DSc