

In this issue

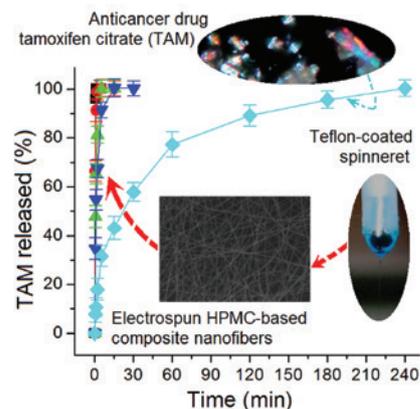
Qing Wang, Deng-Guang Yu, Sun-Yi Zhou,
Chen Li and Min Zhao

Electrospun amorphous medicated nanocomposites fabricated using a Teflon-based concentric spinneret

<https://doi.org/10.1515/epoly-2017-0110>
e-Polymers 2018; 18(1): 3–11

Full length article: A Teflon-coated concentric spinneret was developed to implement a modified coaxial electrospinning process, by which hydroxypropyl methylcellulose-based composite nanofibers were produced for promoting the fast dissolution of tamoxifen citrate.

Keywords: modified coaxial electrospinning; nanocomposite; polymeric composite; poorly water-soluble drug; Teflon.



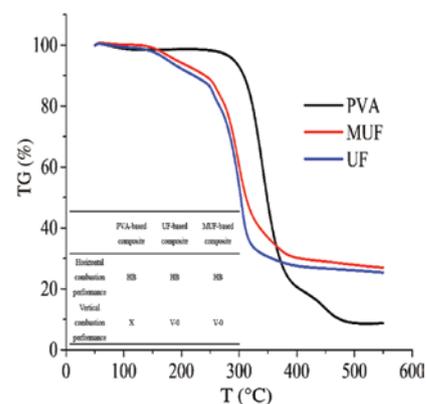
Baohua Tang, Chen Wang, Zhongjun Shu,
Yong Wang and Xiaoqi Shao

Performance and preparation of modified pearlite thermal-insulating composites

<https://doi.org/10.1515/epoly-2017-0075>
e-Polymers 2018; 18(1): 13–17

Full length article: Three composites were prepared by filling the composition of hydrophobically modified pearlite with PVA, urea-formaldehyde resin, and melamine urea formaldehyde resin. Properties including combustion time, smoke density, oxygen index, and thermal conductivity, as well as the effects of component ratio on the combustion performance were determined for each of the three composites.

Keywords: flame retardancy; melamine urea formaldehyde resin; pearlite; polyvinyl alcohol; urea-formaldehyde resin.

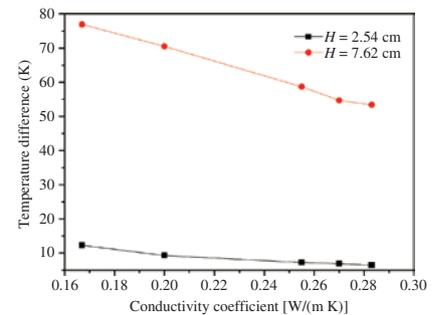


Xiaoxia Wang, Qinglin Wang, Linlin Gao and Yuxi Jia
Effects of key thermophysical properties on the curing uniformity of carbon fiber reinforced resin composites

<https://doi.org/10.1515/epoly-2017-0104>
 e-Polymers 2018; 18(1): 19–26

Full length article: The focus of this study is on the effects of key thermophysical properties of resin on the curing uniformity of AS4/3501-6 composite by means of the coupled thermochemical analysis with the method of numerical simulation. The results clearly indicate that the conductivity coefficient and specific heat of resin have obvious influence on curing uniformity, especially for thick laminates, while the density of resin has not noticeable effect on the curing uniformity. The simulation results can help to guide the material preparation of industrial production.

Keywords: carbon/epoxy composites; curing uniformity; thermochemical model; thermophysical property.



Dae Young Kim, Hee Seong Kim and Ji Hoon Kim
Collapse characteristics of a circular-cross-section CFRP pipe structure member using finite element analysis

<https://doi.org/10.1515/epoly-2017-0106>
 e-Polymers 2018; 18(1): 27–33

Full length article: Finite element analysis was used to predict the material properties of the carbon fibers and the resin composing a carbon fiber reinforced plastics in cases of laminated carbon fibers and modified external angles. The results verify the approach's reliability by comparing the simulation results and the real test results related to the material properties of the carbon fibers and the resin.

Keywords: CFRP; FEA; GENOA; pipe structure member; static-collapse.



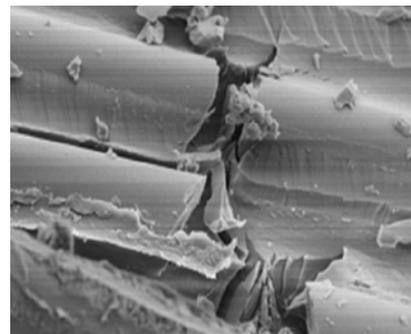
Shaohua Zeng, Mingxia Shen, Pengpeng Duan, Fengling Lu, Shangneng Chen and Yijiao Xue

Effect of ultrasonic-assisted impregnation parameters on the preparation and interfacial properties of MWCNT/glass-fiber reinforced composites

<https://doi.org/10.1515/epoly-2017-0112>
e-Polymers 2018; 18(1): 35–47

Full length article: An ultrasonic-assisted impregnation method was employed to deposit carboxyl multiwalled carbon nanotubes (MWCNTs) onto the E-glass fiber fabric (Gff) for the preparation of the MWCNT-Gff reinforcer. The effects of ultrasonic power, duration, and temperature on the dispersion of MWCNTs onto Gff were investigated, and the mechanical properties, interlaminar adhesion, and dynamic viscoelasticity of the resulting MWCNT-Gff-reinforced composites (MGCs) were evaluated.

Keywords: carbon nanotubes; glass fiber fabrics; interlaminar shear; mechanical properties; polymer composites.



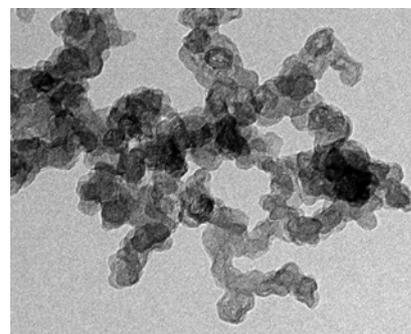
Zhiyu Yan, Hong Zhao, Baozhong Han, Jiaming Yang and Junqi Chen

The suppression of space charge accumulation in CB/LDPE nanocomposites and its association with molecule relaxation

<https://doi.org/10.1515/epoly-2017-0111>
e-Polymers 2018; 18(1): 49–56

Full length article: The space charge within low density polyethylene (LDPE) is captured by the traps formed by molecules participating in α relaxation. The interaction between adding carbon black (CB) particles and LDPE reduces the amount of defects formed by molecules participating in α relaxation, which leads to space charge characteristic improvement of CB/LDPE nanocomposites.

Keywords: CB/LDPE nanocomposites; dynamic mechanical analysis; α relaxation; space charge; thermally stimulated current.



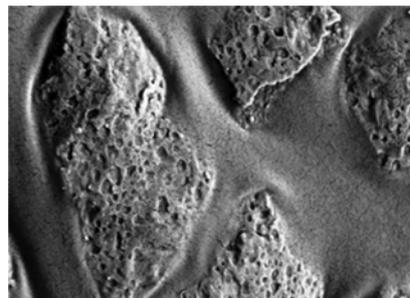
Dejiang Yang, Chun Wei, Yongyang Gong,
Tianxi Liu and Jian Lv

**Effects of preparation methods on the
mechanical and thermal properties of
graphene-modified HNBR composites**

<https://doi.org/10.1515/epoly-2017-0074>
e-Polymers 2018; 18(1): 57–65

Full length article: Graphene nanosheet-modified hydrogenated nitrile butadiene rubber (GNS/HNBR) composites were prepared via solution-mixing and mechanical-blending methods. The curing performance, mechanical properties, and heat resistance of the prepared composites were studied. The results showed that with the method of solution-blending under sonication, GNS was effectively peeled and uniformly dispersed in HNBR.

Keywords: graphene nanosheet; hydrogenated nitrile butadiene rubber; mechanical blending; mechanical properties; solution mixing.

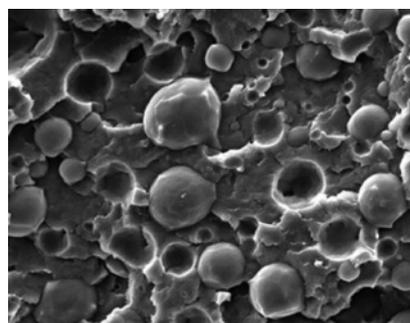


Cong Meng and Jin-ping Qu
**Mechanical and thermal properties of
polybutylene terephthalate/ethylene-
vinyl acetate blends using vane extruder**

<https://doi.org/10.1515/epoly-2017-0073>
e-Polymers 2018; 18(1): 67–73

Full length article: Poly(butylene terephthalate) (PBT)/ethylene-vinyl acetate copolymer (EVA) blends with different contents of EVA were prepared by an vane extruder. From the observation of morphologies, impact strength and dynamic mechanical analysis, the EVA particles were well dispersed in the PBT matrix and improved the impact strength of PBT.

Keywords: compatibility; elongation flow; rheology; shear flow; toughen.



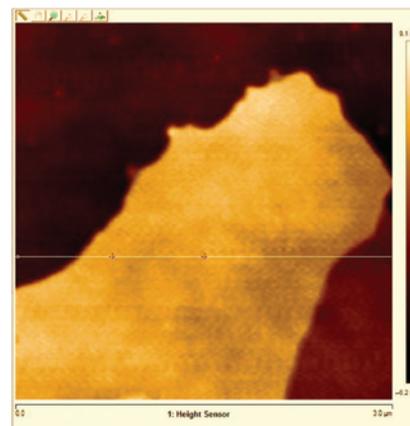
Lei Sang, Wentao Hao, Yuanyuan Zhao,
Lulu Yao and Peng Cui
**Highly aligned graphene oxide/water-
borne polyurethane fabricated by *in-situ*
polymerization at low temperature**

<https://doi.org/10.1515/epoly-2017-0141>
e-Polymers 2018; 18(1): 75–84

Full length article:

Nanocomposites of waterborne polyurethane (WPU) containing graphene oxide sheets (GO) were prepared by an *in-situ* polymerization method at low temperature. GO and polyurethane segments may be linked by hydrogen bonding, or covalently bound by *in-situ* polymerization processes at low temperature. The GO-WPU nanocomposite materials of more than 0.9% content reveal a highly aligned direction. The interaction destroys the original segment mixing and forms a new segment morphology.

Keywords: graphene oxide; hydrogen bonding; *in-situ* polymerization; low temperature; waterborne polyurethane.

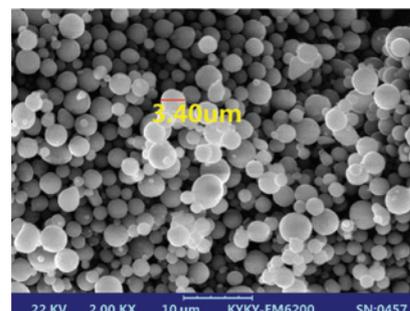


Pin Lu, Zhaoming Qu, Qingguo Wang,
Yan Wang and Wei Cheng
**Conductive switching behavior of epoxy
resin/micron-aluminum particles
composites**

<https://doi.org/10.1515/epoly-2017-0164>
e-Polymers 2018; 18(1): 85–89

Full length article: Epoxy resin (ER)/micron-aluminum particles (MP) composites with different filling concentrations of spherical particles were fabricated. The nonlinear conductive behavior of ER/MP composites under increasing applied voltage using improved V-I method was investigated. The conductivity of ER/MP composites increase up to 3–4 orders of magnitude when the conductor-insulator transition occurs. The switching threshold voltage decreases with the increase of volume fraction of MP in the composites.

Keywords: conductive paths; conductive switching behavior; conductor-insulator transition; tunnel effect.

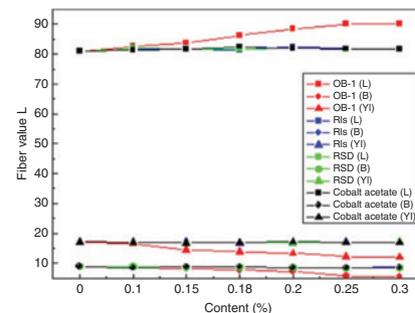


Shouyun Zhang and Jinghong Ma
Improvement of color value of bio-based polyamide 56 fibers

<https://doi.org/10.1515/epoly-2017-0079>
 e-Polymers 2018; 18(1): 91–95

Full length article: Three types of whitening modifiers were introduced into the bio-based PA56 fibers by the *in-situ* polymerization method and the melt blending method in order to improve the fiber color. The color values and mechanical properties of PA56 fibers were tested and analyzed and the optimum additive ratio and process conditions are discussed.

Keywords: bio-based fiber; color values; fluorescent whitening; polyamide 56.



Xipo Zhao, Zheng Ding, Yuejun Zhang, Yingxue Wang and Shaoxian Peng
Preparation and crystallization kinetics of polyesteramide based on poly(L-lactic acid)

<https://doi.org/10.1515/epoly-2017-0171>
 e-Polymers 2018; 18(1): 97–104

Full length article: Using the melt polycondensation method, a polyesteramide was prepared based on poly(L-lactic acid) prepolymer and poly(ϵ -caprolactam) prepolymer and was characterized by FT-IR and $^1\text{H-NMR}$. Isothermal crystallization behavior at different temperatures and non-isothermal crystallization kinetics at different cooling rates were investigated.

Keywords: copolymers; isothermal crystallization; non-isothermal crystallization; poly(lactic acid); polyesteramide.

