In this issue

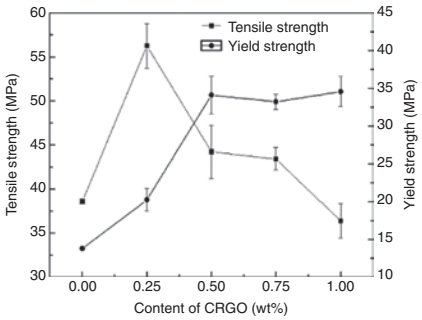
Xin Liu, Xiao Yu Shao, Guan Biao Fang, Hai Feng He and Zhen Gao Wan

Preparation and properties of chemically reduced graphene oxide/copolymer-polyamide nanocomposites

DOI 10.1515/epoly-2016-0094
e-Polymers 2017; 17(1): 3–14

Full length article: To enhance the physical properties of copolymer-polyamide (CO-PA), a sequence of nanocomposites based upon CO-PA and chemically reduced graphene oxide (CRGO) nanoplatelets were prepared by *in-situ* reduction using hydrazine hydrate. Graphene oxide (GO), prepared by the improved Hummers method, was used to fabricate CRGO nanaoplatelets. AFM, TEM, FTIR, and XRD analysis showed that the thickness and the width of GO was about 0.9 nm and 1 μm, respectively.

Keywords: chemical reduction; copolymer-polyamide; graphene oxide; nanocomposites.



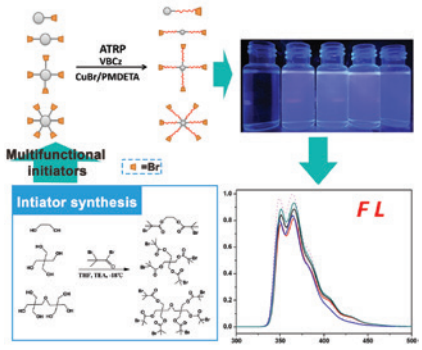
Tengfei Mao, Yanzi Gou, Jun Wang and Hao Wang

Synthesis and properties of well-defined carbazole-containing fluorescent star polymers of different arms

DOI 10.1515/epoly-2016-0076
e-Polymers 2017; 17(1): 15–22

Full length article: A series of fluorescent carbazole-containing star polymers with 1-, 2-, 4-, 6-arms were successfully synthesized using VBCz as monomer and multifunctional bromide as initiators via ATRP. The effect of the PVBCz star polymer architecture on their optical and electrochemical properties was investigated.

Keywords: atom transfer radical polymerization (ATRP); carbazole; fluorescence; star polymer; 9-(4-vinylbenzyl)-9H-carbazole (VBCz).



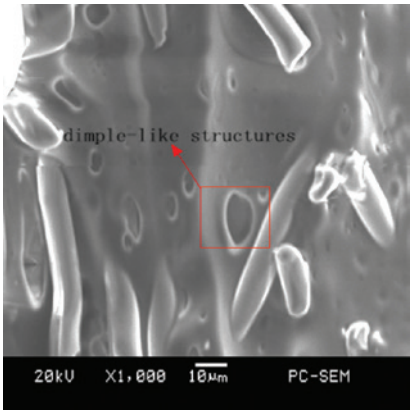
Yuan Fang Chen, Tao Zhang, Meng Tang, Ding Xie, Qian Long and Cai Yun Li

The effect of high-current pulsed electron beam modification on the surface wetting property of polyamide 6

DOI 10.1515/epoly-2016-0078
e-Polymers 2017; 17(1): 23–29

Full length article: This study demonstrates that different modification pulse voltages affect the wetting property of the surface of polyamide 6 (PA6) with a certain regularity. Broadly, the hydrophilic property of PA6's surface increases with increasing pulsed voltage.

Keywords: contact angle; HCPEB; PA6; roughness; surface modification.



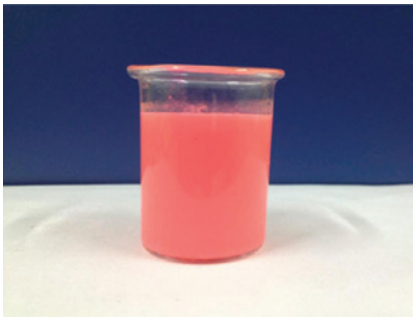
Ming Liu, Can Chen, Wen-Xin Li, Xiao Zhu, Shuang Li and Chun-Ling Zheng

Synthesis and application of waterborne polyurethane fluorescent composite

DOI 10.1515/epoly-2016-0136
e-Polymers 2017; 17(1): 31–37

Full length article: Waterborne polyurethane was synthesized. To obtain polyurethane/polyacrylate (PU/PA) and crosslinked polyurethane-acrylate (LPUA), respectively. Fourier transform infrared (FTIR) spectroscopy confirmed the presence of functional groups of LPUA. Thermogravimetric analysis (TGA) illustrated that the heat-resistance of LPUA was better than that of PU/PA and WPU.

Keywords: acrylate; chemical integration; cotton fabric; fluorescent composite; waterborne polyurethane.



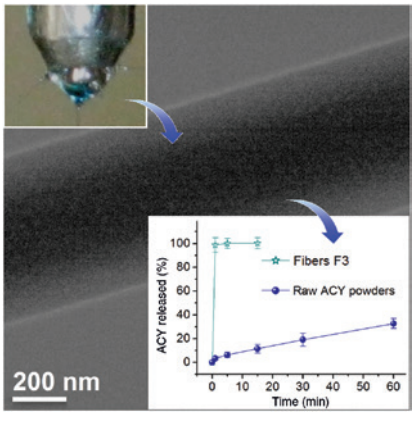
Yong-Hui Wu, Deng-Guang Yu, Hai-Peng Li, Xiang-Yang Wu and Xiao-Yan Li

Medicated structural PVP/PEG composites fabricated using coaxial electrospinning

DOI 10.1515/epoly-2016-0244
e-Polymers 2017; 17(1): 39–44

Full length article: A core (polyethylene glycol 6000 and acyclovir)-shell (polyvinylpyrrolidone K60) medicated composite was created using a coaxial electrospinning process, which could promote the instant dissolution of the poorly water-soluble drug.

Keywords: coaxial electrospinning; core-shell nanofibers; nanocomposites; polymeric excipients; poorly water-soluble drug.



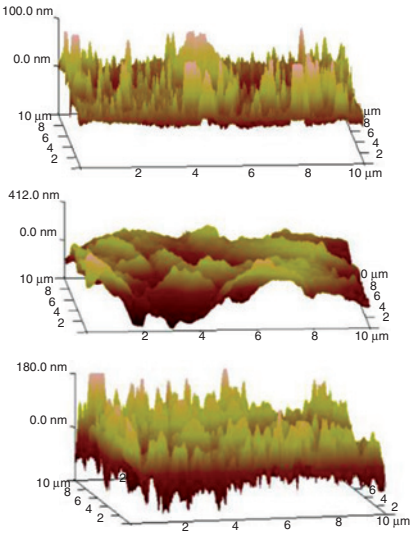
Wei Wang, Dongxin He, Kai Yang, Shiyuan Liu, Shu Song and Denghui Yi

Research of the thermal aging mechanism of polycarbonate and polyester film

DOI 10.1515/epoly-2016-0179
e-Polymers 2017; 17(1): 45–56

Full length article: Insulating paper is a traditional insulation material used for transformer insulation. Transformer development is not only limited to small sizes and large capacities, but also insulation life as insulating paper cannot withstand high temperatures. Therefore, recent studies have focused on improving the performance of insulation paper and discovering better insulation materials.

Keywords: aging resistance; characteristics in oil; polymeric materials; solid material properties; thermal aging.



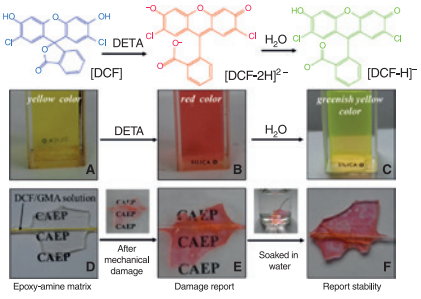
Yakun Guo, Pengxiang Zhao, Xiaofang Wang, Duigong Xu, Jingrong Zhong, Guozong Yue and Maobing Shuai

Damage indication of 2′, 7′-dichlorofluorescein for epoxy polymer and the effect of water on its damage indicating ability

DOI 10.1515/epoly-2016-0135
e-Polymers 2017; 17(1): 57–64

Full length article: The mechanical damage of epoxy-amine coatings could be indicated visually by an obvious color change from yellow to red due to deprotonation of 2′, 7′-dichlorofluorescein (DCF) from acid form [DCF] to base form $[DCF\text{-}2H]^{2-}$ in the presence of amine.

Keywords: color stability; 2′, 7′-dichlorofluorescein; damage indication; epoxy polymer; self-reporting.



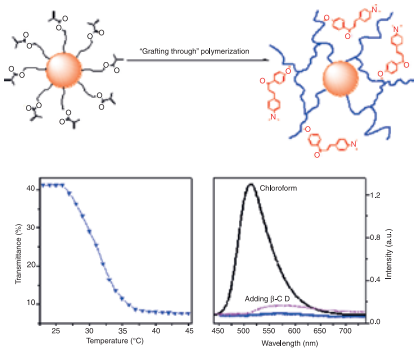
Chunhua Luo, Meijuan Qian and Qiujing Dong

Synthesis and characterization of thermosensitive and polarity-sensitive fluorescent PNIPAM-coated gold nanoparticles

DOI 10.1515/epoly-2016-0247
e-Polymers 2017; 17(1): 65–70

Full length article: Thermosensitive PNIPAM-coated Au nanoparticles [AuNPs@P(NIPAM-co-MADMAC)] were synthesized by the radical "grafting through" copolymerization of 4-methacryloyloxy-4′-dimethylaminochalcone (MADMAC), MAEL-capped AuNPs and N-isopropylacrylamide (NIPAM) using azobisisobutyronitrile (AIBN) as the initiator.

Keywords: gold nanoparticles; molecular recognition; poly(N-isopropylacrylamide); sensitive fluorescence; thermo-sensitivity.



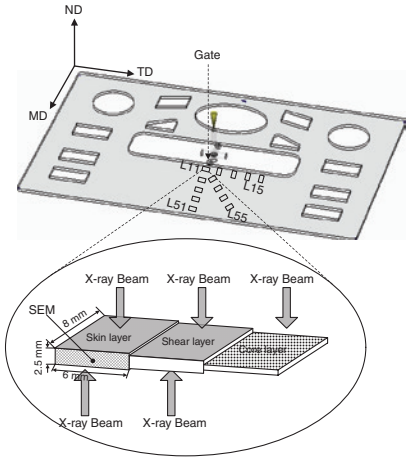
Jiquan Li, Shaoguang Yang, Lih-Sheng Turng, Wei Zheng and Shaofei Jiang

Comparative study of crystallization and lamellae orientation of isotactic polypropylene by rapid heat cycle molding and conventional injection molding

DOI 10.1515/epoly-2016-0251
e-Polymers 2017; 17(1): 71–81

Full length article: The crystallization and orientation of isotactic polypropylene molded by rapid heat cycle molding and conventional injection molding were studied. Due to the varying cooling rates and shearing, the molded parts exhibited a multilayered structure (skin, shear, and core) across the part thickness, reflecting different degrees of crystallization and lamellae orientation.

Keywords: crystallization; isotactic polypropylene (iPP); microstructure; multilayered structure; rapid heat cycle molding.



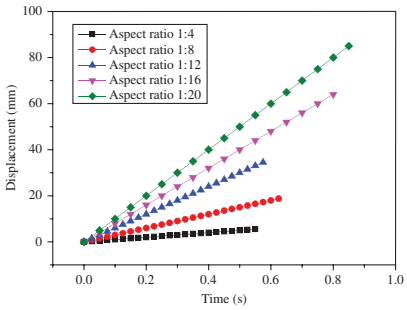
Yi-Chang Lee, Ho Chang, Ching-Long Wei, Rahnfong Lee, Hua-Yi Hsu and Cheng-Chung Chang

Determination of deformation of a highly oriented polymer under three-point bending using finite element analysis

DOI 10.1515/epoly-2016-0248
e-Polymers 2017; 17(1): 83–88

Full length article: Finite element analysis is utilized to elucidate the deformation and failure of highly oriented polymers. Three-point bending tests are performed to simulate the properties of the orthotropic highly oriented polymer, yielding results that reveal both tension failure and shear failure.

Keywords: finite element analysis; highly oriented polymer; I-beam; molecular chains; orthotropic material.



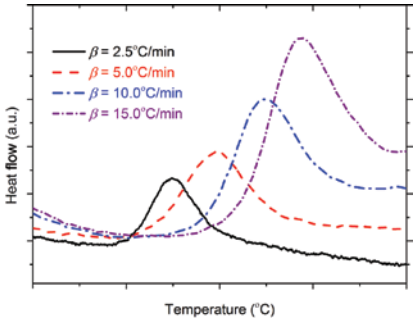
Ma Hui, Liu Yu-Cun, Chai Tao, Hu Tuo-Ping, Guo Jia-Hu, Yu Yan-Wu, Yuan Jun-Ming, Wang Jian-Hua, Qin Ning and Zhang Liang

Kinetic studies on the cure reaction of hydroxyl-terminated polybutadiene based polyurethane with variable catalysts by differential scanning calorimetry

DOI 10.1515/epoly-2016-0245
e-Polymers 2017; 17(1): 89–94

Full length article: This paper employs differential scanning calorimetry (DSC) to investigate the reactions of hydroxyl-terminated polybutadiene (HTPB) binder and isophorone isophorone diisocyanate (IPDI) with two different cure catalysts, namely, dibutyl tin dilaurate (DBTDL) and stannous octanoate (TECH).

Keywords: catalyst; cure kinetics; DSC; HTPB; viscosity.



Wei-Min Cheng, Xiang-Ming Hu, Yan-Yun Zhao, Ming-Yue Wu, Zun-Xiang Hu and Xing-Teng Yu

Preparation and swelling properties of poly(acrylic acid-co-acrylamide) composite hydrogels

DOI 10.1515/epoly-2016-0250
e-Polymers 2017; 17(1): 95–106

Full length article: In order to study the effect of composite clays on the mechanical properties, water absorption and salt tolerance of the hydrogel, a poly(acrylic acid-co-acrylamide)/bentonite/kaolin composite hydrogel has been prepared.

Keywords: bentonite; composite hydrogel; kaolin; salt resistance; thermal resistance.