

In this issue

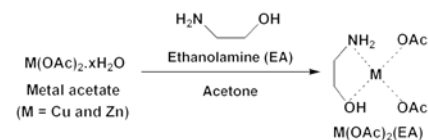
Duangruthai Sridaeng, Wannisa Jitaree, Preecha Thiampanya and Nuanphun Chantarasiri

Preparation of rigid polyurethane foams using low-emission catalysts derived from metal acetates and ethanolamine

DOI 10.1515/epoly-2016-0021
e-Polymers 2016; 16(4): 265–275

Full length article: Metal acetate-ethanolamine complexes $[M(OAc)_2(EA)]$, $M=Cu$ and Zn] were synthesized in one step and used as low-emission catalysts in the preparation of rigid polyurethane (RPUR) foams.

Keywords: copper-ethanolamine complex; low-emission catalyst; metal acetate; rigid polyurethane foam; zinc-ethanolamine complex.

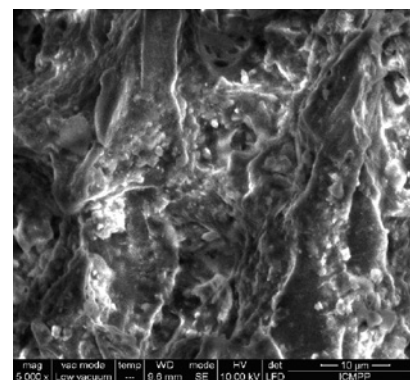


Stefan Oprea and Veronica Oprea
Biodegradation of crosslinked polyurethane acrylates/guar gum composites under natural soil burial conditions

DOI 10.1515/epoly-2016-0038
e-Polymers 2016; 16(4): 277–286

Full length article: This paper describes soil burial biodegradation processes of the high crosslinked polyurethane acrylates and their composites with different content of the guar gum. High biodegradability of these materials, although are highly crosslinked, is provide by the modified soybean oil and guar gum from their structures. This kind of material is important for the natural environmental.

Keywords: biodegradable composites; guar gum; mechanical properties; polyurethane acrylates; soil burial.



Szymon Żaczek, Agnieszka Pająk, Rafał Anyszka and Grażyna Janowska

Influence of phthalocyanine pigments on the properties of flame-retardant elastomeric composites based on styrene-butadiene or acrylonitrile-butadiene rubbers

DOI 10.1515/epoly-2016-0046
e-Polymers 2016; 16(4): 287–294

Full length article: A study about the influence of the impartment of phthalocyanine pigments into elastomeric composites was conducted. Acrylonitrile-butadiene (NBR) and styrene-butadiene (SBR) rubbers crosslinked by either sulfur or dicumyl peroxide were filled with non-toxic flame retardants ($\text{Mg}(\text{OH})_2$ or $\text{Al}(\text{OH})_3$) and thermally stable pigments (zinc or chloroaluminum phthalocyanines). Determination of cross-linking degree, mechanical properties, aging coefficient, thermal analysis (TG, DTG, DTA) and flammability tests (oxygen index, combustion in air) were carried out.

Keywords: acrylonitrile-butadiene rubber; elastomeric composites; flammability; phthalocyanine pigments; styrene butadiene rubber.



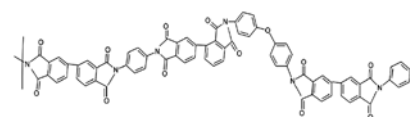
Yonglin Lei, Yuanjie Shu, Jinhua Peng, Yongjian Tang and Jichuan Huo

Synthesis and properties of low coefficient of thermal expansion copolyimides derived from biphenyltetracarboxylic dianhydride with p-phenylenediamine and 4,4'-oxydianiline

DOI 10.1515/epoly-2015-0267
e-Polymers 2016; 16(4): 295–302

Full length article: Three copolyimides from s-BPDA, a-BPDA, 4,4'-ODA, PDA exhibited high T_g , high thermal stability, great ultimate strength and low CTE. The copolymerization of s-BPDA/PDA with a small number of 4, 4'-ODA/a-BPDA was a useful means for enhancing flexibility without sacrificing low CTE.

Keywords: 4,4'-oxydianiline; biphenyltetracarboxylic dianhydride; copolyimide; low-CTE; p-phenylenediamine.

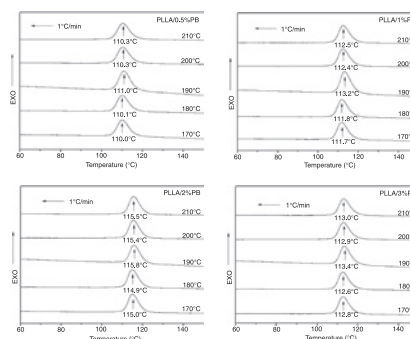


Yan-Hua Cai and Li-Sha Zhao
Thermal behavior of modified poly(L-lactic acid): effect of aromatic multiamide derivative based on 1H-benzotriazole

DOI 10.1515/epoly-2016-0052
 e-Polymers 2016; 16(4): 303–311

Full length article: The non-isothermal crystallization behavior of PLLA is related to the set final melting temperature as well as PB concentration. When the set final melting temperature is 190°C, PLLA/PB samples exhibit the highest T_{cp} , indicating 190°C is the optimization blending temperature for PLLA/PB. In addition, under the same final melting temperature, PLLA/2%PB has the highest T_{cp} , further confirming the best effect of crystallization at 2 wt% PB. In particular, when the set final melting temperature is 210°C, the T_{cp} between PLLA/2%PB and PLLA/0.5%PB appears the maximum difference 5.2°C.

Keywords: aromatic multiamide; crystallization; nucleating agent; poly(L-lactic acid); thermal behavior.

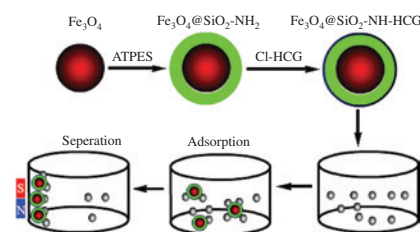


Dun Chen, Tunsagnl Awut, Bin Liu, Yali Ma, Tao Wang and Ismayil Nurulla
Functionalized magnetic Fe₃O₄ nanoparticles for removal of heavy metal ions from aqueous solutions

DOI 10.1515/epoly-2016-0043
 e-Polymers 2016; 16(4): 313–322

Full length article: Fe₃O₄ nanoparticles (MNP) were coated with 3-aminopropyltriethoxy-silane (APTES), resulting in anchoring of primary amine groups on the surface of the particles, then four kinds of novel magnetic adsorbents (Fe₃O₄@SiO₂-NH-HCGs) were formed by grafting of different heterocyclic groups (HCG) on amino groups via substitution reaction.

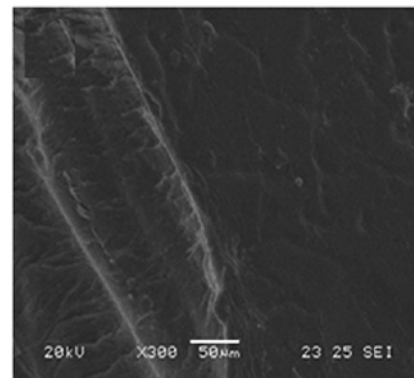
Keywords: adsorbent; Fe₃O₄ nanoparticles; heavy metal ions removal; magnetic separation; removal efficiency.



J. Sahari and M.A. Maleque
Effect of oil palm ash on the mechanical and thermal properties of unsaturated polyester composites

DOI 10.1515/epoly-2016-0079
 e-Polymers 2016; 16(4): 323–329

Full length article: This research was carried out to evaluate the effect of oil palm ash (OPA) on the mechanical and thermal properties of biocomposites. Different compositions of OPA were introduced to unsaturated polyester by using a simple casting method with methyl ethyl ketone peroxide as a hardener. The specimens were prepared based on ASTM D5083 standards for tensile testing.

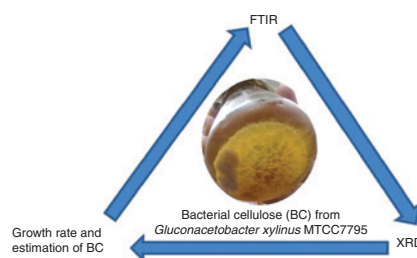


Keywords: biocomposites; mechanical; oil palm ash (OPA); thermal; unsaturated polyester (UPE).

Rushali Singh, Ashwani Mathur, Navendu Goswami and Garima Mathur
Effect of carbon sources on physicochemical properties of bacterial cellulose produced from *Gluconacetobacter xylinus* MTCC 7795

DOI 10.1515/epoly-2016-0047
 e-Polymers 2016; 16(4): 331–336

Full length article: BC production from *Gluconacetobacter xylinus* MTCC 7795 in HS media modified with various carbon sources has been investigated in shake flask culture. Growth kinetics and Physiochemical properties of BC produced was studied using FTIR and XRD.

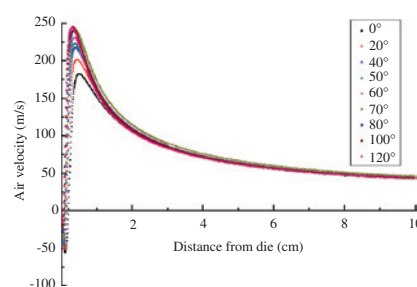


Keywords: bacterial cellulose; biopolymer; FTIR; XRD.

Xin Sanfa and Wang Xinhou
Investigation into the effect of the angle of dual slots on an air flow field in melt blowing via numerical simulation

DOI 10.1515/epoly-2016-0057
 e-Polymers 2016; 16(4): 337–342

Full length article: Structure and properties of Polytetrafluoroethylene (PTFE) fibers were characterized thoroughly. It was found that the longitudinal surface of the fiber was not smooth and full of grooves. The cross sections of fibers were sheet-like and irregular.



Keywords: air flow field; angle of dual slots; melt blowing; numerical simulation; polymer.

Ya-Juan Su, Ze-Xin Ma and
Jian-Hua Huang

**Simulation study on the assembly
of rod-coil diblock copolymers
within coil-selective nanoslits**

DOI 10.1515/epoly-2015-0275

e-Polymers 2016; 16(4): 343–349

Full length article: Dissipative particle dynamics simulations are performed to study the self-assembly of rod-coil (RC) diblock copolymers confined in a slit with two coil-selective surfaces. The effect of rod length and slit thickness on the assembly structure is investigated. A morphological phase diagram as a function of slit thickness and rod length is presented.

Keywords: confinement; dissipative particle dynamics; rod-coil diblock copolymer; rod orientation; self-assembly structure.

