

# Publications, Papers and Presentations for Dr. Steve Gedon

## Publications (Reprints available upon request)

Steven C. Gedon, "Cellulose Esters, Organic," The Polymeric Materials Encyclopedia: Synthesis, Properties, and Applications, CRC Press, 1994.

Steven C. Gedon, "Cellulose Esters, Organic," The Concise Encyclopedia of Chemical Technology, John Wiley & Sons, 1994.

Steven C. Gedon, "Cellulose Esters, Organic," Kirk-Othmer Encyclopedia of Chemical Technology. Fourth Ed., John Wiley & Sons, 1993.

Komarek, Ronald J.; Gardner, Robert M.; Buchanan, Charles M.; Gedon, Steven C. *Journal of Applied Polymer Science* **1993**, 50, 1739-1746.

Buchanan, Charles M.; Gedon, Steven C.; Percy, Barry, G.; White, Alan W.; Wood, Matthew D. *Macromolecules* **1993**, 26, 5704-5710.

Buchanan, Charles M.; Gedon, Steven C.; White, Alan W.; Wood, Matthew D. *Macromolecules* **1993**, 26(11), 2963-2967.

Buchanan, Charles M.; Gardner, Robert M.; Gedon, Steven C.; Komarek, Ronald J.; White, Alan W., in *Fundamentals of Biodegradable Polymers and Materials*, Technomic Pub. Co., Lancaster, PA, **1993**.

Buchanan, Charles M.; Gedon, Steven C.; White, Alan W.; Wood, Matthew D. *Macromolecules* **1992**, 25(26), 7373-7381.

Baldwin, Steven W.; Gedon, Steven C. *Synth. Comm.* **1991**, 21(4), 587-596.

Gedon, Steven Carl *Diss. Abstr. Int. B* **1990**, 51(4), 1824.

## Presentations

'Plasticization of Cellulose Esters,' S.C. Gedon, 3M Corporation, Minneapolis, MN, 1993.

Buchanan, C. M.; Gedon, S.C.; White, A.W.; 206th ACS National Meeting, Chicago, Ill., 1993, 115.

Buchanan, C. M.; Gedon, S.C.; White, A.W.; Wood, M.D. 45th ACS Southeast Regional Meeting, Johnson City, TN, 1993, 115.

'Double Diastereoselectivity in Nitron Cylcoadditions,' Gedon, Steven C. ; Baldwin, S. W., 197th ACS National Meeting, Dallas, Texas, April 1989, ORGN-123.

"Biodegradation of Cellulose Acetates," by Charles Buchanan, Robert Gardner, Ron Komarek, Steve Gedon and Alan White, was presented at the Biodegradable Materials and Packaging Symposium in Natick, MA on June 16, 1993.

"Asymmetric Induction in Nitrene Cycloadditions", S.C. Gedon and S.W. Baldwin, North Carolina Section of the ACS Meeting-in-Miniature, 4/9/88.

## Patents

Steven C. Gedon and Andrea Trotto, Crompton Corporation, U. S. Patent 6,586,612 issued on July 1, 2003.

Steven C. Gedon and Melinda Hale, Crompton Corporation, 9/10/02, U.S. Patent 6,448,425.

Steven C. Gedon and Melinda Hale, Crompton Corporation, 8/13/02, U.S. Patent 6,433,206.

Steven C. Gedon, Melinda Hale, Michael Reynolds, and Russell Malz, Jr. Crompton Corporation, 7/9/02, U.S. Patent 6,417,381.

Steven C. Gedon and Melinda Hale, Crompton Corporation, 6/5/2001, U.S. Patent 6,242,627.

Charles Buchanan, Robert Gardner, Matthew Wood, Alan White, Steven Gedon, Fred Barlow, Eastman Kodak Company, 3/8/94, U.S. Patent No. 5,292,783.

Charles Buchanan, Robert Gardner, Matthew Wood, Alan White, Steven Gedon, Fred Barlow, Eastman Kodak Company, 9/24/96, U.S. Patent No. 5,559,171.

Shriram Bagrodia, David Fagerburg, Steven Gedon, Joseph Watkins, Paul Lawrence, Mark Rule, Eastman Kodak Company, 1/19/93, U.S. Patent 5,180,775.

Steven Gedon and John Hubbs, Eastman Chemical Company, 2/13/95, European Pat. No. 93915222.9.

John C. Hubbs, Marti N. Harrison, Steven Gedon, Charles M. Buchanan, Douglas C. Hoffman, Alan W. White, Eastman Chemical Company, 7/10/96, U.S. Serial No. 08/452,937.

C.M. Buchanan, M.D. Wood, A.W. White, S.C. Gedon, F.D. Barlow, Eastman Chemical Company, 10/14/93, U.S. Serial No. 07/797,512.

C.M. Buchanan, M.D. Wood, A.W. White, S.C. Gedon, F.D. Barlow, Eastman Chemical Company, 2/7/95, U.S. Serial No. 08/163,441.

C.M. Buchanan, M.D. Wood, A.W. White, S.C. Gedon, F.D. Barlow, Eastman Chemical Company, 12/12/95, U.S. Serial No. 08/427,944.

C.M. Buchanan, M.D. Wood, A.W. White, S.C. Gedon, F.D. Barlow, Eastman Chemical Company, 2/12/96, U.S. Serial No. 08/429,400.

C.M. Buchanan, M.D. Wood, A.W. White, S.C. Gedon, F.D. Barlow, Eastman Chemical Company, 5/20/96, U.S. Serial No. 08/428,979.

John C. Hubbs, Marti N. Harrison, Steven Gedon, Charles M. Buchanan, Douglas C. Hoffman, Alan W. White, Eastman Chemical Company, 4/29/97, U.S. Patent 5,625,029.

## Abstracts

1995:234499 Document No. 122:10941

**Poly(3-hydroxyalkanoates) and their manufacture and blends with other polymers.**

Hubbs, John Clark; Harrison, Marti Noel; **Gedon, Steve Carl**; Buchanan, Charles Michael; Gardner, Robert Marshall; Hoffman, Douglas Claire; White, Alan Wayne (Eastman Kodak Co., USA). PCT Int. Appl. WO 9400506 A1 19940106, 52 pp. DESIGNATED STATES: W: CA, JP, KR; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 93-US5374 19930607. PRIORITY: US 92-901306 19920619.

AB High-mol.-wt. poly(3-hydroxyalkanoates), useful for blending with polymers in the manuf. of biodegradable articles, are prepd. in high yields by polymn. of .beta.-substituted-.beta.-propiolactone(s) in the absence of water in the presence of an anionic initiator optionally used in the presence of a chelating agent. Thus, .beta.-butyrolactone contg. KOAc and 18-crown-6 was stirred 6 days at room temp. and 27 days at 60.degree. to give a polymer (I) with no.-av. mol. wt. 2700 and polydispersity 3.5. A 60:40 cellulose acetate propionate-I blend film exhibited wt. loss 24.5+-.9.5% after 15 days in a composting test.

L5 ANSWER 2 OF 11 CAPLUS COPYRIGHT 1998 ACS

1994:436957 Document No. 121:36957

**Miscible blends of polyesters and cellulose esters.**

Buchanan, Charles M.; Gardner, Robert M.; Wood, Matthew D.; White, Alan W.; **Gedon, Steven C.**; Barlow, Jr Fred D. (Eastman Kodak Co., USA). U.S. US 5292783 A 19940308, 32 pp. Cont.-in-part of U.S. Ser. No. 736,262, abandoned. (English). CODEN: USXXAM. APPLICATION: US 91-797512 19911121. PRIORITY: US 90-620225 19901130; US 91-736262 19910723.

AB The title blends contain aliph. and/or aliph.-arom. polyesters and, optionally, other polymers and are useful for moldings, films, and fibers. A transparent blend of 20% 1,4-butanediol-succinic acid-terephthalic acid copolymer and 80% cellulose acetate propionate was prepd.

L5 ANSWER 3 OF 11 CAPLUS COPYRIGHT 1998 ACS

1994:199381 Document No. 120:199381

**Biodegradation of radiolabeled cellulose acetate and cellulose propionate.**

Komarek, Ronald J.; Gardner, Robert M.; Buchanan, Charles M.; **Gedon, Steven** (Res. Lab., Eastman Chem., Kingsport, TN, 37662, USA). J. Appl. Polym. Sci., 50(10), 1739-46 (English) 1993. CODEN: JAPNAB. ISSN: 0021-8995.

AB Biodegrdn. of cellulose acetate and cellulose propionate was conclusively established with a naturally derived mixed microbial culture derived from activated sludge and 14C-labeled cellulose esters. Radiolabeled cellulose esters were synthesized with either [1-14C]-acetate or [1-14C]-propionate and back hydrolyzed to the desired degree of substitution (DS), 1.77-2.64. Biodegrdn. was measured in an in vitro aerobic culture system designed to capture 14CO<sub>2</sub> produced by the aerobic microbial metab. of the cellulose esters. Microorganisms were able to extensively degrade cellulose [1-14C]-acetate (CA) with a 1.85-2.57 DS in 14-31 days. More than 80% of the original 14C-polymeric C was biodegraded to 14CO<sub>2</sub> for CA substrates with a 1.85 DS. CA polymers with 2.07 and 2.57 DS yielded >60% conversion to 14CO<sub>2</sub>. The amt. of biodegrdn. obsd. with cellulose [1-14C]-propionate with 2.11, 2.44, and 2.64 DS were lower than the corresponding acetyl ester and were 0.09-1.1%. However, cellulose [1-14C]-propionate with 1.77 and 1.84 DS underwent very rapid degrdn. in the mixed culture system, with 70->80% conversion of labeled polymeric C metabolized to 14CO<sub>2</sub> in 29 days. The high level of microbial utilization of C from both cellulose esters and its conversion to CO<sub>2</sub> confirms the biodegradability of these polymers and the potential they have for total mineralization in natural microbiol. active environments.

L5 ANSWER 4 OF 11 CAPLUS COPYRIGHT 1998 ACS

1993:587833 Document No. 119:187833

**Biodegradation of cellulose acetates.**

Buchanan, C. M.; Gardner, R. M.; Komarek, R. J.; **Gedon, S. C.**; White, A. W. (Res. Lab., Eastman Chem. Co., Kingsport, TN, 37662-5150, USA). Biodegrad. Polym. Packag., 133-40. Editor(s): Ching, Chauncey; Kaplan, David L.; Thomas, Edwin L. Technomic: Lancaster, Pa. (English) 1993. CODEN: 59ILAV.

AB The biodegrdn. of cellulose acetate is reported. Cellulose acetates with degrees of substitution ranging from 1.74 to 2.50 were studied in compost systems and with radioactivity labeled polymer (labeled in the acetate side groups). Biodegrdn. was found with all samples, and rates were directly related to degree of substitution; higher degrees of substitution degraded at slower rates.

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1993:581721 Document No. 119:181721

**Cellulose ester-aliphatic polyester blends: the influence of diol length on blend miscibility.**

Buchanan, Charles M.; **Gedon, Steve C.**; Percy, Barry G.; White, Alan W.; Wood, Matthew D. (Res. Lab., Eastman Chem. Co., Kingsport, TN, 37662, USA). Macromolecules, 26(21), 5704-10 (English) 1993. CODEN: MAMOBX. ISSN: 0024-9297. OTHER SOURCES: CJACS.

AB A series of aliph. polyesters consisting of a C5 dicarboxylic acid (glutaric acid) and C2 to C8 straight-chain diols were blended with cellulose acetate propionate (I) at different compn. levels. Characterization by dynamic mech. thermal anal. revealed that, when blended with CAP, the polyesters prepd. from C2 to C6 diols formed transparent, stable, amorphous glasses which exhibited a single compn.-dependent glass temp., Tg. Upon reaching a C8 diol, the blend became partially miscible. Within the miscible blends, anal. of their differential mech. thermal anal. spectra indicates that the polyester prepd. from the C4 diol had the highest level of miscibility with I while the polyesters prepd. from C5 and -CH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>- diols gave the lowest degree of miscibility. Sub-Tg mobilization processes, centered in the range -60 to -50.degree., were obsd. for the blends prepd. from polyesters which contained C2, -CH<sub>2</sub>CH<sub>2</sub>OCH<sub>2</sub>CH<sub>2</sub>-, and C6 diols. The activation energy for the sub-Tg relaxation process (210 kJ mol<sup>-1</sup>) for the 40% poly(diethylene glutarate)-I blend suggests cooperative, localized motion of a I-polyester complex. However, no relationship was found between low temp. relaxation processes and blend miscibility.

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1993:235068 Document No. 118:235068

**Cellulose acetate propionate and poly(tetramethylene glutarate) blends.**

Buchanan, Charles M.; **Gedon, Steve C.**; White, Alan W.; Wood, Matthew D. (Res. Lab., Eastman Chem. Co., Kingsport, TN, 37662, USA). Macromolecules, 26(11), 2963-7 (English) 1993. CODEN: MAMOBX. ISSN: 0024-9297. OTHER SOURCES: CJACS.

AB Blends of a polyester, poly(tetramethylene glutarate) (I), and cellulose acetate propionate (II) in the range of 50-90 wt.% II are prepd. by thermal compounding. Carbon-13 NMR and gel-permeation chromatog. show that no transesterification and little loss in mol. wt. occurs during thermal mixing. DSC measurements of I and of II cooled rapidly from the melt reveal that I is a low melting (39.degree.), low glass temp. (Tg) (-55.degree.), semicryst. polymer, while the II is an amorphous, high Tg (136.degree.) polymer. I-II blends are optically clear and, when quenched from the melt, amorphous. Some blend compns. exhibit small crystn. exotherms and melting endotherms in DSC expts. The temp. of these melting endotherms decreases linearly from .apprx.168 to 148.degree. with decreasing II content over the range 85-60% II, while the heat of fusion reaches a max. at 75% II in the blend; the Tgs of these same blends agree well with predicted values. II can crystallize from the solid-state soln. under appropriate exptl. conditions depending on the content of amorphous polymer and on the Tg/crystn. temp. gap. Dynamic mech. data for the blends are also presented.

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1993:148819 Document No. 118:148819

**Blends of poly(arylene sulfide) and ethylene-propylene rubber.**

Bagrodia, Shriram; Fagerburg, David R.; **Gedon, Steven**; Watkins, Joseph J.; Lawrence, Paul B.; Rule, Mark (Eastman Kodak Co., USA). U.S. US 5180775 A 19930119, 5 pp. Cont.-in-part of U.S. Ser. No. 753,536, abandoned. (English). CODEN: USXXAM. APPLICATION: US 92-819696 19920113. PRIORITY: US 91-753536 19910903.

AB The title blends comprise 99.9-90 % of poly(arylene sulfide) [(AS)<sub>1-x</sub>(ASS)<sub>x</sub>]<sub>n</sub> [I; A = (un)substituted arylene; n = .gtoreq.25; x = 0.5-0.001] and 0.1-10% maleated ethylene-propylene rubber (II) contg. 40-90 mol.% ethylene and 60-10 mol.% propylene.. Qual. examn. of cryogenically fractured films extruded from I-II blends showed high interfacial adhesion and, occasionally, crosslinking between 2 phases.

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1993:82431 Document No. 118:82431

#### **Blends of cellulose esters and polyesters.**

Buchanan, Charles Michael; Gardner, Robert Marshall; Wood, Matthew Davie; White, Alan Wayne; **Gedon, Steven Carl**; Barlow, Fred Dewey, Jr. (Eastman Kodak Co., USA). PCT Int. Appl. WO 9209654 A2 19920611, 119 pp. DESIGNATED STATES: W: AU, BR, CA, FI, JP, KR, NO; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 91-US8827 19911126. PRIORITY: US 90-620225 19901130; US 91-736262 19910723; US 91-797512 19911121.

AB Binary blends of cellulose esters and aliph.-arom. copolyesters or aliph. polyesters and ternary blends of cellulose esters, aliph. polyesters and/or aliph.-arom. copolyesters, and/or other polymers are useful as films, moldings, and fibers. Blends of cellulose acetate propionate and 1,4-butanediol-succinic acid-terephthalic acid copolymer were miscible and gave transparent films.

L5 ANSWER 9 OF 11 CAPLUS COPYRIGHT 1998 ACS  
1992:652377 Document No. 117:252377

#### **Cellulose acetate butyrate and poly(hydroxybutyrate-co-valerate) copolymer blends.**

Buchanan, Charles M.; **Gedon, Steve C.**; White, Alan W.; Wood, Matthew D. (Res. Lab., Eastman Chem. Co., Kingsport, TN, 37662, USA). Macromolecules, 25(26), 7373-81 (English) 1992. CODEN: MAMOBX. ISSN: 0024-9297. OTHER SOURCES: CJACS.

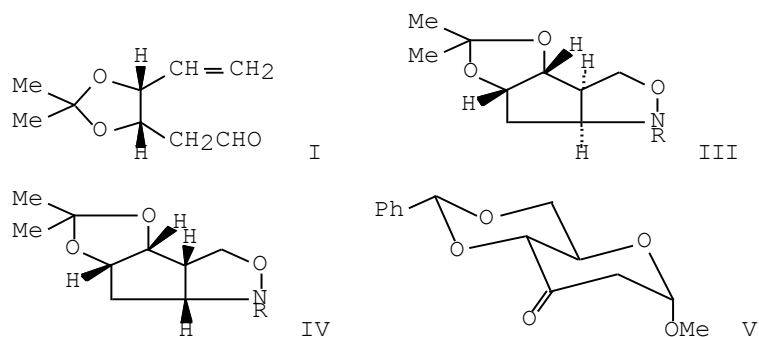
AB Blends in the compn. range 20-80 wt.% of cellulose acetate butyrate (I) and hydroxybutyric acid-hydroxyvaleric acid copolymer (II) were prep'd. by thermal compounding. <sup>13</sup>C NMR and gel-permeation chromatog. showed that no transesterification occurred during thermal mixing and that little change in mol. wt. occurred. Blends contg. 20-50% II were amorphous, optically clear miscible blends, while the blends contg. 60-80% II were semicryst., partially miscible blends. Both thermal and dynamic-mech. anal. revealed the presence of a high-temp. transition that was sensitive to blend compn. and a low-temp. transition whose position was largely uninfluenced by the blend compn.; the high-temp. transitions of the 20-50% II blends closely matched calcd. glass temps. for a fully miscible blend. <sup>13</sup>C NMR in the melt of the blend components and of a 50% II blend revealed that even in a homogeneous melt, I and II had vastly different mobilities. It was proposed that the dual transitions in the blends contg. 20-50% I arose from dynamic heterogeneity and not from a classical miscibility gap. X-ray diffraction studies of the cryst. blends indicated that I crystd. in a morphol. unique from the I blend component. Blend morphol. strongly influenced phys. properties such as tensile strength and tangent modulus; blends contg. 70% and 80% I exhibited tear strengths that were superior to either of the blend components.

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1991:535978 Document No. 115:135978

#### **Effect of nitrogen substitution on the diastereoselection of intramolecular nitrone/alkene cycloadditions.**

Baldwin, S. W.; **Gedon, S. C.** (Paul M. Gross Chem. Lab., Duke Univ., Durham, NC, 27706, USA). Synth. Commun., 21(4), 587-96 (English) 1991. CODEN: SYNCAV. ISSN: 0039-7911. OTHER SOURCES: CASREACT 115:135978.

GI



AB The diastereomeric ratios of several intramol. nitron/alkene cycloaddn. reactions are shown to be sensitive to the substituent on the nitron nitrogen in a double diastereodifferentiation process. Thus, vinyldioxolaneacetaldehyde I was treated with RNHOH [R = (S)-PhCHMe] [(S)-II] to give cycloadducts III and IV in the ratio of 20:1 resp., whereas, similar treatment of I with (R)-II gave III and IV in a ratio of 5:1 resp. I was prepd. from benzylidenedeoxyhexopyranosidulose V.

L5 ANSWER 11 OF 11 CAPLUS COPYRIGHT 1998 ACS

1991:62441 Document No. 114:62441 **A carbohydrate-based approach to the total synthesis of pretazettine.** Gedon, Steven Carl (Duke Univ., Durham, NC, USA). 196 pp. Avail. Univ. Microfilms Int., Order No. DA9026740 From: Diss. Abstr. Int. B 1990, 51(4), 1824 (English) 1990. AB Unavailable