

ROBERT M. KIMMEL, Sc. D.
ASSOCIATE PROFESSOR OF PACKAGING SCIENCE
DIRECTOR, Clemson University Center for Flexible Packaging

Office

232 Poole Agricultural Center, Box 340316
Dept. of Food, Nutrition and Packaging Sciences
Clemson University, Clemson, SC 29634-0316

EDUCATION

Massachusetts Institute of Technology, Cambridge,

MA 1968

Sc. D. in Materials Engineering

Dissertation: Effects of High Pressure on Amorphous Polymers

1967

Materials Engineer

1965

M. S. (unspecified) Concentrations in polymer science, textile techno-

logy

Thesis: Birefringence and Orientation States in Polyacryloni-

trile 1964

B. S. in Materials Engineering

Thesis: Temperature Dependence of Birefringence Effects in Acrylonitrile Polymers

UNIVERSITY AND TEACHING EXPERIENCE

1999 – present **Clemson University**, Clemson, SC

2010 - present **Director, Packaging Science Program, Department of Food, Nutrition and Packaging Sciences**

2006 -- 2010 **Chair, Department of Packaging Science**

2004 – present **Director, Center for Flexible Packaging**

Associate Professor (tenured 2005): Co-founder and director of Clemson Center for Flexible Packaging. Developed and teach Packaging Science capstone courses "Package Design and Development" and "Packaging Career Preparation"; developed core undergraduate/graduate courses "Converting for Flexible Packaging" and "Applications of Polymers in Packaging"; developed and taught 800 level graduate courses "Flexible Packaging," "Semi-rigid Packaging." Short courses: "Materials for Confectionary Packaging," "Understanding Plastics Packaging," "Analyzing Plastics Patents."

Research: Environmental impact of grocery carrier bags. Sustainable package design. Development of bag-in-container packaging for large volumes of liquids. Development of polymeric packaging for MREs. Effects of norbornene and octene content on the properties of LLDPE/COC blends as heat seal layers; Gelatin as an active layer in multi-layer packages; Unique barrier films using "Smart Blending" chaotic advection; Adaptation of materials characterization techniques to collaborative discovery-based learning in the undergraduate Packaging Science curriculum.

1999 Food Packaging Design Conference, Orlando, FL, Lecturer

1978 Celanese Chemical Group Middle Management Development Program, Lecturer

1973 NSF Summer Institute for College Teachers on Applied Polymer Science, Cleveland,

Lecturer

1967

Massachusetts Institute of Technology

Teaching Assistant: full responsibility as instructor for graduate course in polymer science required for all textile technology graduate students

INDUSTRIAL EXPERIENCE

1999 - present **Reedy River Associates, Simpsonville, SC, President.** Consulting to the plastics and packaging industries. Expert witness for plastics and packaging (infringement, validity, trade dress, breach of contract, antitrust—plaintiff and defendant experience). Projects to develop and quantify product development and market entry strategies for major international plastics producers to introduce new

INDUSTRIAL EXPERIENCE (continued)

- 1968 - 1998 **Hoechst NA Holdings and its predecessor companies**
1994 - 1998 **Business Manager, Hoechst Research & Technology, Greer, SC.** Managed group of 9 to create three corporate R&D projects in multi-layer, semi-rigid and rigid plastic packaging, focused on high barrier PET resins, bottles and films, with estimated sales potential >\$500MM. Based on a jointly-developed strategy, the target business unit created a new organization and product line to which these projects were transferred and commercialized.
- 1991 - 1994 **Department Head, New Films Business Development, Hoechst AG, Wiesbaden, Germany.** Managed department of 20 conducting basic and applied research in new polymers, films and casings. Established and led applications lab and new business development team to support LCP laminates for printed circuit boards.
- 1987 - 1991 **Business Manager, Packaging and Specialties Films, Hoechst Celanese Corporation, Greer, SC.** Global business team leader and directly responsible for 40 people in sales, marketing and technical service for Hostaphan® polyester film to the Packaging and Industrial
Converting markets in North America, Latin America and Europe. Grew business >6X to >\$50MM, with 60% of sales from new products. Co-authored and secured approval for three business strategies. Created, secured approval and implemented the Hostaphan packaging strategy, including building a new team hired from the industry, a \$2MM applications laboratory, and an award-winning advertising/publicity program. Justified and secured approval for >\$100MM in capital investment for new product lines. Established and managed global product and market development of Hostaphan 4400 ultra-clear films for pressure-sensitive labels and Hostaphan 2600 improved adhesion packaging film, which won AIMCAL Technology of the Year in its first year of commercial sales and numerous industry awards for specific packages. Principal representative to five major trade associations, including Flexible Packaging Association, Tag and Label Manufacturers Association, AIMCAL and Screen Printing Association.
- 1985 -1987 **Process Research Manager, Polyester Film, American Hoechst Corporation.** Managed department of 45 people, including films process research and R&D pilot line (24/7), engineering, facilities, accounting, and safety.
- 1979 - 1985 **Industry Manager, Packaging and Specialties Films, American Hoechst Corporation.**
1977 - 1979 **Product Specialist, Packaging and Specialties Films, Celanese Plastics Company.**
1975 - 1977 **Project Manager, Polyester Bottle Resin, Celanese Plastics Company.** Responsible for process development, pilot manufacturing and manufacturing strategy development for the entry of Celanese into polyester bottle resin
- 1975 **Product Specialist, Packaging and Specialties Films, Celanese Plastics Company**
1973 - 1975 **Group Leader Application/Product Development, Celanese Plastics Company.** Applied polyester film research, including new shrink film product line.
- 1968 - 1973 **Sr. Research Scientist/Team Leader, Celanese Research Company, Summit, NJ.** Research in polyester films, polyester resins, graphite fibers and composites, acrylonitrile fibers and films, acetate fibers, and polymer physics. Pioneered new thermal analysis techniques now considered standard. Team leader for multi-disciplinary group supporting the polyester film business.
- 1965 **Research Scientist, U.S. Army Natick Labs - Ballistic Materials Lab, Natick, MA**

INTERNATIONAL EXPERIENCE AND LANGUAGES

- 2018 Expert testimony for complainant before International Trade Commission
2015 Expert testimony for Plaintiff before Federal Court, Calgary
2012 Expert for defendant in patent infringement case before Singapore High Court
2014 Member of Scientific Committee, 19th IAPRI World Conference on Packaging, Melbourne
2013 Member of Scientific Committee and presenter, 26th IAPRI Symposium on Packaging, Espoo, Finland
2012 Member of Scientific Committee, 18th IAPRI World Conference on Packaging, San Luis Obispo
2011 Member of Scientific Committee, 25th IAPRI Symposium on Packaging, Berlin, Germany
2010 Member of Scientific Committee and attendee, 17th IAPRI World Conference on Packaging, Tianjin, China
2009 Symposium chair, 24th IAPRI Symposium on Packaging, Greenville, SC
2008 16th IAPRI World Conference on Packaging, Bangkok, Thailand

INTERNATIONAL EXPERIENCE AND LANGUAGES (cont)

- 2008 Seminar at Korea University; Keynote speaker at YonSei Packaging Forum; Keynote speaker at the 20th KOPAST International Seminar on Packaging Science & Technology, Seoul, Korea
- 2007 Visits to ESIEC, France; Clemson Brussels Center; European companies)
- 2007 23rd IAPRI Symposium on Packaging, Windsor, UK
- 2005 Visits to packaging science schools in Europe; seminar at Korea University, Seoul
- 2004 14th IAPRI World Conference on Packaging, Stockholm, Sweden
- 2004 Invited speaker Masterfoods international innovation conference, Tokyo, Japan
- 2003 Tours of Great Britain food and packaging companies; visit to Faraday Association
- 2002 13th IAPRI World Conference on Packaging, East Lansing, MI
- 2001 12th IAPRI World Conference on Packaging, Warsaw, Poland
- 1991 – 1996 Responsible for global coordination of a U.S.-Germany-Japan development partnership for LCP films.
- 1991 - 1994 Managed a new films business development department, including marketing and semi-works manufacturing, while living in Germany for three years
- 1988 - 1992 Member of negotiating team and later technical and marketing coordination teams for three way U.S.-Germany-Japan polyester film joint venture.
- 1988 – 1990 Managed successful anti-dumping case against Japanese and Korean polyester film producers, including testifying before the International Trade Commission.
- 1987 – 1991 Global business team leader for Hoechst Celanese Packaging and Specialty Films

Extensive business travel in Western Europe and Japan; personal/business travel in Eastern Europe, Middle East, Asia.

Languages (with varying degrees of fluency): German, French, Hebrew

HONORS AND AWARDS

- 2000--present Listed in *Who's Who in America* and *Who's Who in American Education*
- 2002 Invited presenter NSF Showcase-2002 ASEE Annual Meeting
- 1975-76 The Fiber Society Lecturer
- 1967 Rohm & Haas Fellow
- 1966 American Can Fellow
- 1964 Susich Award in Fiber Rheology
- 1960-64 National Merit Scholar
- 1960 First Place winner, Mass. State Science Fair "Graft Copolymers of polystyrene and polymethyl methacrylate with natural rubber"

PROFESSIONAL MEMBERSHIPS

Institute of Packaging Professionals
Society of Plastics Engineers
International Safe Transit Association

COMMUNITY SERVICE

Volunteer, instructional technology, Woodland Elementary School, 1997-2004, Greer, SC,
Graduate of Leadership Greenville, 1988-89, Greenville, SC
Co-founder and chairman, Suzuki Academy of Talent Education, 1984-89, Greenville, SC

PUBLICATIONS

Peer-reviewed Report/Book

R.M. Kimmel, Kay D. Cooksey and A. Littman, "Life Cycle Assessment of Grocery Bags in Common Use in the United States" (2015) Clemson, SC: Clemson University Press. 192 pgs.
http://tigerprints.clemson.edu/cudp_environment/6/

Refereed Journal Articles

T. Chen, D. Darby, R. Kimmel, K. Cooksey and E. Gohr. "Characterizing Metallocene-catalyzed Skin Layers on Oriented Polypropylene Films" *J. Plastic Film and Sheeting*. In preparation

K. W. Kim, B.J. Min, Y.T. Kim, R. M. Kimmel, K. Cooksey, S.I. Park "Antimicrobial activity against foodborne pathogens of chitosan biopolymer films of different molecular weights", *LWT-Food Sci. Tech* **44** 565-569 (2011)

H. J. Bae, H. J. Park, D. O. Darby, R. M. Kimmel and W. S. Whiteside "Development and characterization of pet/fish gelatin-nanoclay composite/LDPE laminate: gelatin-nanoclay film as a functional barrier layer" *Pkg. Tech. Sci.*, **22**, 371-383 (2009)

H. J. Bae, Park, H. J., Hong, S. I., Byun, Y. J., Darby, D. O., Kimmel, R. M., Whiteside, W. S.. "Effect of clay content, homogenization rpm, ph, and ultrasonification on mechanical and barrier properties of fish gelatin/montmorillonite nanocomposite films" *LWT -- Food Science and Technology*. **42**, 1179–1186.(2009)

H. J. Bae, D. O. Darby, R.. M. Kimmel, H. J. Park, W. S. Whiteside, "Effects of transglutaminase induced crosslinking on properties of fish gelatin-nano clay composite film", *J. Food Chem.*, **114** 180-189 (2009)

R.A. Hurley, R. M. Kimmel, D. D. Darby, K. Cooksey, L. Bix "Design and Build of an accelerometer to determine package orientation over time" NIPHLE Annual Conference: Norfolk, VA (2008)

Y-T. Kim, Y-S. Hong, R. M. Kimmel, J-H Rho, C-H. Lee "New Approach for characterization of biopolymer film using proton behavior determined by low field ¹H NMR" *J. Agri. Food Chem.*, **55** 10678-84 (2007)

R. M. Kimmel. "Undergraduate Labs in Applied Polymer Science – A Case Study" *Proc. 2002 ASEE Ann. Conf.* (2002)

R. M. Kimmel "A Primer on Plastic" *Graphic Arts Monthly* **55**, 132, 135-136 (1983)

R. M. Kimmel. "Polyester Film" *J. Microgr.* **12**, 15-23 (1982)

W. Whitney and R. M. Kimmel. "Griffith Equation and Carbon Fiber Strength" *Nature Physical Science* **237**, 93-94 (1972).

R. M. Kimmel and D. R. Uhlmann. "Activation-energy Spectra for Retraction of Hot-Stretched Polystyrene and Shear Creep in Polymethyl Methacrylate" *J. Appl. Phys.* **42**, 4926-4930 (1971).

R. M. Kimmel and D. R. Uhlmann. "Effects of Pressure on Amorphous Polymers: Thermodynamic Properties of Densified Polymethyl Methacrylate" *J. Appl. Phys.* **42**, 4917-4925 (1971).

R. M. Kimmel and D. R. Uhlmann. "Effects of High Pressure on Amorphous Polymers. II. Annealing of Densified Polymethyl Methacrylate" *J. Appl. Phys.* **42**, 1892-1896 (1971).

PUBLICATIONS (continued)

Refereed Journal Articles (continued)

- R. M. Kimmel and D. R. Uhlmann. "Effects of High Pressure on Amorphous Polymers: Densification of Polymethyl Methacrylate" *J. Appl. Phys.* **41**, 2917-2927 (1970).
- R. M. Kimmel and D. R. Uhlmann. "Activation Energy Spectra for Nonlinear Relaxation Processes" *J. Appl. Phys.* **41**, 592 (1970).
- R. M. Kimmel and D. R. Uhlmann. "On the Energy Spectrum of Densified Silica Glass." *Phys. Chem. Glasses* **10**, 12-17 (1969).
- R. M. Kimmel and D. R. Uhlmann. "Activation Energy Spectra for Relaxation in Amorphous Materials. I. Volume Relaxation in Polystyrene and Polyvinyl Acetate" *J. Appl. Phys.* **40**, 4254-4260 (1969).
- R. M. Kimmel and R. D. Andrews. "Birefringence Effects in Acrylonitrile Polymers. II. The Nature of the 140°C Transition" *J. Appl. Phys.* **36**, 3063-3071 (1965).
- R. D. Andrews and R. M. Kimmel. "Solid State Structure and Glass Transitions in Polyacrylonitrile: the Hetero-bonded Solid State" *J. Polymer Sci.* B3, 167-169 (1965).
- R. D. Andrews and R. M. Kimmel. "Birefringence Effects in Acrylonitrile Polymers. I Effects at Different Temperatures" *J. Appl. Phys.* 35, 3194-3202 (1964).

Other Journal Articles

Trade Journals

- R.M. Kimmel. "PET Also is a Film Material" *Plastics Design & Processing* **23**, 15-16 (1983).
- R. M. Kimmel "The Basics of Polyester Film for Metallising" *Food & Drug Pkg.* 47 21-25 (1983)
- B.L. Kindberg and R.M. Kimmel. "Films: Flexibility in Labeling" *Paper, Film & Foil Converter* **55**, 46-48 (1981)

Proceedings, Published with Oral Presentations

- R. M. Kimmel, K.D. Cooksey and A. Littman, "Environmental Impact Of Grocery Bags in Common Use in the U.S. Market" 26th IAPRI Symposium on Packaging, Espoo, Finland (2013)
- R.A. Hurley, K. Cooksey, D. Darby, R. Kimmel and L. Bix "The Design of a Data Recorder to Test the Effects of Color Contrast on 'This Side Up' Pictorial Markings on Package Orientation within UPS Ground" *Proc. of 25rd IAPRI Symposium on Packaging*, Berlin, Germany. (2011)
- D. O. Darby, W. S. Whiteside and R. M. Kimmel "Troubleshooting Case Studies—Centre for Flexible Packaging" *Proc. Int'l Polyolefins Conf.*, Houston TX Feb. 22-25 (2010)
- R. M. Kimmel and K. D. Cooksey "Challenges in Sustainable Packaging" Functional Packaging Through Chemistry, North Jersey Section American Chemical Society, Newark, NJ (2008) – Keynote Address
- H. Bae, H. Park, D. Darby, R. Kimmel and W. Whiteside. "Development and characterization of PET/fish gelatin-nanoclay composite/LDPE laminate" IAPRI World Conference on Packaging, Bangkok, Thailand (2008)

PUBLICATIONS (continued)

Proceedings, Published with Oral Presentations (continued)

R.M. Kimmel, W.S. Whiteside, K. D. Cooksey and D. O. Darby, "New Developments in Food Packaging in North America" 20th KOPAST International Seminar on Packaging Science & Technology, Seoul, Korea (2008) – Keynote Address

V. A. Chougule, R. M. Kimmel and D. A. Zumbrennen. "Novel Barrier Films using Smart Blending Technology for Reducing Flavor Migration in Packaging Applications" *Proc. of 23rd IAPRI Symposium on Packaging*, Windsor, U.K. (2007)

D. Darby, K. Cooksey and R. M. Kimmel. "Flavor and aroma permeation concepts and applications" *Proc 2006. TAPPI Place Conference* (2006)

V. A. Chougule, R. M. Kimmel and D. A. Zumbrennen. "Morphology, Barrier and Mechanical Properties of Novel Films developed using Smart Blending Technology" *Proc. 2005 International Polyolefins Conference* (2005)

V. A. Chougule, R. M. Kimmel and D. A. Zumbrennen. "Novel Barrier Films using Smart Blending Technology for Packaging Applications" *Proc. Flexible Packaging Conference 2005* (2005)

V. A. Chougule, R. M. Kimmel and D. A. Zumbrennen. "Development of Novel Barrier Films using Chaotic Advection 'Smart Blending' Device" *Proc. 2005 Annual Technical Conference of the Society of Plastics Engineers* (2005)

Y. T. Kim and R.M. Kimmel. "Development of Gelatin Film as an Active Packaging Layer" *Proc 2004. TAPPI Place Conference* (2004)

R. M. Kimmel. "Polymer Physics Laboratories for the Undergraduate Packaging Curriculum" 13th IAPRI World Conference on Packaging, Lansing, MI, June, 2002.

R. M. Kimmel, A. Wolf and J. A. Penoyer. "Wide-mouth PET bottles: achieving hot-filling ability through multi-layer reinforcement" 12th IAPRI World Conference on Packaging, Warsaw, Poland, June, 2001

R. M. Kimmel. "21st Century Challenges for the Packaging Industry" Food Packaging Design Conference, Orlando, FL, April 11-13, 2000

Abstracts, Published with Oral Presentation or Poster Session and not subsequently published

D. Darby and R.M. Kimmel "Packaging Materials Trends" GAA Global Summit, New Orleans (2020)

R. M. Kimmel, K.D. Cooksey and A. Littman, "Environmental Impact Of Grocery Bags in Common Use in the U.S. Market" IOPP Bags Committee Annual Meeting, Greenville, SC (2014)

R. M. Kimmel "Sustainable Packaging-One Academic's View" Yon Sei University Packaging Research Forum, Seoul, Korea (2008)

R. M. Kimmel "Results of NACDS/Clemson Packaging Study" NACDS Supply and Logistics Conference, Orlando March 26, 2007 (invited speaker)

R. Thomas, R. M. Kimmel, W. S. Whiteside. "Rethinking Packaging Design to Support a Piece-Pick Distribution Operation" NACDS Supply and Logistics Conference, San Diego March 19, 2006 (Invited speaker)

PUBLICATIONS (continued)

Abstracts, Published with Oral Presentation or Poster Session and not subsequently published

R. M. Kimmel. "Smart Blending; The Clemson University Center for Flexible Packaging" Korea University, Seoul, Korea. October 19, 2005 (invited speaker)

Y. S. Hong, Y. T. Kim, R. M. Kimmel, J. H. Rho, C. H. Lee. "Characterization of Proton Behavior In Gelatin Films Plasticized With Glycerol Using Low Field Nuclear Magnetic Resonance" *Abstracts Of Papers Of The American Chemical Society* **230**, U53-U54 Meeting Abstract: 102-AGFD Published: AUG 28 2005

R. M. Kimmel." Recent Developments in Polymers, Extrusion Technology and Films" Masterfoods international innovation conference, Tokyo, Japan, Oct. 2004

Y. T. Kim, R. M. Kimmel and S. H. Jun "Effect of incorporated antioxidants (ascorbic acid, citric acid, phytic acid and BHA) on physical properties and antioxidant activity of gelatin film" IFT Annual Meeting, Las Vegas, NV July 15, 2004 (Poster, 1st Place Student Competition)

Y. T. Kim and R. M. Kimmel. "Effects of a series of organic acids on the properties of edible gelatin films" IFT Annual Meeting, Chicago, IL July 14, 2003 (Poster)

R. M. Kimmel. "The Challenge of the Plastic Beer Bottle" IFT Annual Meeting, Dallas, TX, June 12, 2000. (Invited speaker)

W. Whitney and R. M. Kimmel "Influence of Structure on the Strength of High Polymers" *Ber. Deutschen Keramischen Gesell.* **50** 25-30 Carbon '72 Annual Conference, Baden-Baden, W. Germany, June 1972.

R. M. Kimmel "Structure-Property Relationships in the After-Processing of Acrylic Yarns" The Fiber Society, Princeton, NJ 1971

R. D. Andrews, T. J. Hammack, E. M. Krokosky and R. M. Kimmel. "Comparative Photoelastic Behavior of Styrene and Acrylic Polymers" *Bull. Am. Phys. Soc.* **11**, 180 (1966)

Books/Chapters

Y. T. Kim, K. W. Kim, J. H. Han, R. M. Kimmel Chapter 6: "Antimicrobial Packaging for Food" in J. Kerry and P. Butler (eds.) Smart Packaging Technologies for Fast Moving Consumer Goods Chichester, UK: John Wiley & Sons (2008).

R. M. Kimmel. "Structure-Property Relationships in the After-Processing of Acrylic Yarns" paper presented to The Fiber Society, Princeton, NJ 1971 and summarized (with figures) in M. Jaffe. "Fibers" in Thermal Characterization of Polymers. E. A. Turi (ed.). New York: Academic Press (1981). pp. 709-792.

R. D. Andrews, Jr., Allison, S.W., Ender, D.H., Kimmel, R.M., Whitney, W. "Research Study on Cold Drawing Phenomena in High Polymers" (1966) Cambridge: M.I.T. Dept. Mechanical Engineering. 161 p.

Program/Symposium Chair

24th IAPRI Symposium on Packaging, May 2009, Greenville, SC
Flex-Pack '99 Europe, Amsterdam, Nov. 8-9, 1999

PUBLICATIONS (continued)

Review and Award Panels

Judge, AIMCAL Product Awards, 2020
Judge, Flexible Packaging Association Achievement Awards 2019
Judge, AIMCAL Product Awards 2019
Judge, AIMCAL Technology Awards, 2018
Judge, Flexible Packaging Association Achievement Awards 2017
Judge, Flexible Packaging Association Achievement Awards 2016
Judge, Flexible Packaging Association Achievement Awards 2015
Packaging Hall of Fame Commission 2014
Packaging Hall of Fame Commission 2011
NSF Division of Undergraduate Education, Arlington, VA July 28-30, 2010
NSF Division of Undergraduate Education, Arlington, VA July 23-26, 2001

Patents

R. M. Kimmel, A.E. Wolf, J.A. Penoyer and D.D. Roth, U.S. Patent 6,426,128 "Co-processable multi-layer laminates for forming high strength, haze-free, transparent articles and methods of producing same" July 31, 2002.

J.E. Kuder, R.N. Demartino, D. Cangiano, R.D. Jester, A.E. Wolf, R. M. Kimmel, S.H. Rounsville, J.A. Penoyer, U.S. Patent 6,312,772 "Multilayer laminate formed from a substantially stretched non-molten wholly aromatic liquid crystalline polymer and non-polyester thermoplastic polymer" Nov. 6, 2001.

R.D. Jester, A.E. Wolf, R. M. Kimmel, D. Cangiano and J.A. Penoyer, U.S. Patent 6,268,026 "Multilayer laminate formed from a substantially stretched non-molten wholly aromatic liquid crystalline polymer and non-liquid crystalline polyester and method for forming same" July 31, 2001

A.E. Wolf, R.M. Kimmel, J.A. Penoyer and D.D. Roth, EP0928683 "Co-processable multi-layer laminates for forming high strength, haze-free transparent articles and methods of producing same" Jul. 14, 1999.

D. Cangiano, J.E. Kuder, A. Wolf, R.D. Jester, R. M. Kimmel, J.A. Penoyer, R.N. DeMartino and S.H. Rounsville, EP0911150 "Laminates formed from wholly aromatic, amorphous stretchable liquid crystalline polymers and non-polyester thermoplastics and methods of forming same" Apr. 28, 1999.

D. Cangiano, A. E. Wolf, R.D. Jester, R.M. Kimmel and J.A. Penoyer, EP0909781 "Laminates formed from wholly aromatic, amorphous stretchable liquid crystalline polymers and non-liquid crystalline polyesters and methods of forming same" Apr. 21, 1999

K-H Kochem, P. Boening, H. Schenk and R. M. Kimmel, DE4310082, "Electroluminescent film, process for its production and use" Sep. 29, 1994

E. C. Chenevy and R. M. Kimmel. U.S. Patent 4,002,426 "Production of Stabilized Non-burning Acrylic Fibers and Films" Jan. 11, 1977.

R. M. Kimmel, J. P. Riggs, R. W. Swander and W. Whitney. U.S. Patent 3,925,524 "Process for the Production of Carbon Filaments" Dec. 9, 1975.

E. C. Chenevy and R. M. Kimmel. U.S. Patent 3,708,326 "Stabilization of Acrylic Fibers and Films" Jan. 2, 1973.

CONSULTING

Technical

Burt's Bees (Clorox)	2016-2017
Tredegar	2011-2013
Frito-Lay North America	2006
McKinsey & Co.	2006
Sterne, Kessler, Goldstein & Fox	2005
T. Floyd Associates	2004-5
Regent Group	2004
3M	2004
Masterfoods USA	2004
Bayer Cropscience	2003
Equistar	2003
Sequella	2003
Kellogg's	2002-3
Nutrasweet	2002
Reckitt Benckiser	2002
Milliken	2000, 2005
Taylor Companies	1999
Ticona	1999

Expert Witness/Litigation

Expert and/or consultant for 77 cases, including 59 patent infringement/validity cases (including 9 IPRs, 1 EPR and 5 ITC Investigations), 4 trade dress/design patent cases and 19 product liability/breach of contract/miscellaneous subject cases; have written 52 expert reports and 42 declarations, have been deposed 22 times and testified in Federal court 6 times (one of these in Canada) and before the ITC one time.