

Summary for Claire Koelsch Sand, Ph.D.

Claire Sand is a Global Packaging Leader with over 35 years of food science and packaging experience. Sand's mission is to enable a more sustainable food system by advancing science and value chain innovations that increase food shelf life and decrease food waste. She manages cross-functional teams, implements innovative solutions, creates compelling business and technology strategies and business cases, and creates implementation roadmaps for the packaging and food industries.



Dr. Sand is the owner and founder of Packaging Technology and Research, LLC, as well as Gazelle Mobile Packaging Inc. She is also an Adjunct Professor at Michigan State University and CalPoly, and a monthly contributor to Packaging Digest. She is an IFT Fellow, the Riester-Davis-Brody Lifetime Achievement in Food Packaging Award recipient, a member of numerous Editorial Boards, the author of the Packaging Value Chain, and the cochair of pacfoodwaste.

Claire has previously worked at Total Quality Marketing, Nestle, General Mills, Kraft Heinz, Safeway, and academia, as well as in basic research, development market research, and marketing in Germany, Colombia, and Thailand.

Dr. Sand received her doctorate in Food Science and Nutrition from the University of Minnesota, as well as a master's and bachelor's degrees in packaging from Michigan State University.

e: claire@packagingtechnologyandresearch.com; w: packagingtechnologyandresearch.com

Current Affiliations

Owner and Founder

- Packaging Technology and Research, LLC

Adjunct Professor

- Michigan State University
- California Polytechnic University (CalPoly)

Columnist

- Food Technology
- Packaging Digest

Current Activities

Recent Awards

- Riester-Davis-Brody award for Life-time achievement in food packaging, 2020
- Fellow, Institute of Food Technologists, 2017

Current Leadership

- SPRING, Advisory Board, 2021-
- pac, Co-Chair Food Waste, 2018-
- Sustainable Packaging Coalition (SPC)-Advisor Food Waste Repackaged, 2021-
- National Science Foundation (NSF) Reviewer, 2021-
- Institute of Food Technologists (IFT), Executive Board, Food Packaging Division, 1990-
- Phi Tau Sigma, Life-time member, 2014-

Current Editorial Boards

- Journal of Food Science Associate Editor and Editorial Board, 2014-
- Packaging Science and Technology, John Wiley and Sons, Editorial Board, 2004-
- Critical Review in Food Science and Technology, Editorial Board, 2019-

Industry Experience: Technology Leadership and Innovation

Owner and Founder

Packaging Technology and Research, LLC. Minneapolis, Minnesota. 1996-present

Responsible for:

1. Budgets
2. Securing funding via grant/proposals
3. Strategic planning
4. Resource management
5. Motivating and managing cross-functional teams and working groups
6. Coaching and mentoring clients and employees to build skill sets needed to achieve career goals and advance in packaging
7. Technical resource to companies on seeking a more sustainable food system

Owner and Founder

Gazelle Mobile Packaging, Inc. Minneapolis, Minnesota. 2019- present

Responsible for:

1. Investor relations
2. Employee and intern hiring
3. Strategic planning and decision making

Category Brand Manager,

Dominick's Finer Foods. Northlake, Illinois. 1997-1998

- Developed and implemented strategies that increased international food sales by 55%
- Identified, sourced, purchased, and marketed international foods
- Applied alternative product, package, and marketing of international foods

Package and Product Development Consultant

Total Quality Marketing. Chicago, Illinois. 1995-1997

- Identified opportunities and refined growth strategies for multiple clients
- Systematized product optimization, training, shelf life extension, investments, and testing

Technical Business Manager, 1993-1995

Research Engineer

Kraft Foods. Glenview, Illinois. 1992-1993

- Managed product launches and resolved food recall issues relating to packaging
- Responsible for the research associated with product/product/process/package for \$126 million Confection Div at Kraft Foods
- Managed rapid development and production scale-up of 1994 introductions
- Researched and resolved the cause of *Kraft* marshmallow stickiness (trisodium phosphate control), reducing product loss by 65%
- Led a "Special Situation" team to resolve a recall and safety crisis
- Launch of *Kraft* Fat-free Philadelphia Cream Cheese
- Launch of *Kraft* Halloween, Spring, and 4th of July Marshmallow shapes.

Engineer, Strategic Technology Division

Grand Metropolitan (General Mills). Minneapolis, Minnesota. 1991

- Explored ohmic, microwave, minimal processes, and silicon oxide (glass) coatings on retort packaging
- Assessed applicability of expert systems to predict shelf life

Packaging Engineer

Gerber Products Company (Nestle). Fremont, Michigan. 1986–1987

Technical Advisor

Org. of American States, Bogota, Colombia. June - September 1986

- Developed a food packaging laboratory model at an existing food research facility

Intern

Bangkok Orchids Co., Bangkok, Thailand. Winter, 1986

Charles of the Ritz. Holmdel, New Jersey. Summer 1984

General Motors. Detroit, Michigan. Summer 1985

Academic Experience

I have demonstrated academic management, teaching, grant/proposal, publishing, and research skills, as well as passion. Furthermore, exposure to various university systems fosters an understanding of the role of service.

Adjunct Professor

Adjunct Professor

Michigan State University. E. Lansing, Michigan
MS and Ph.D., 2007-present

- Created and taught the Packaging Value Chain (now the Advanced Value Chain) course from an existing structure

California Polytechnic University (CalPoly), San Luis Obispo, California
MS and Ph.D., 2017-present

- Created and taught the Packaging Value Chain course to meet CalPoly unique needs

Academic: University and Stakeholder Management

University of Wisconsin. Menomonie, Wisconsin

Administrative and Research Director, Food Packaging Technology Center, 2002-2007

- Co-developed, implemented, and managed the creation of the Center, which served as a business incubator
- Engineered \$11.2 million for center for small farms and value-added food businesses
- Initiated and directed research project work with small area farmers and businesses
- Chair and Vice-Chair of Curriculum and Instruction Committee 2002-2006

University of Wisconsin. Menomonie, Wisconsin

Tenured Associate Professor, 1998-2007

- Dean's Recognition for excellence in a multidisciplinary approach
- Outstanding Researcher of the Year Nominee 2003
- Created and taught Food Packaging and Advanced Food Packaging courses
- Responsible for teaching 4 courses per semester

Academic: Online Teaching and Course Development

Rochester Institute of Technology. Rochester, New York

Adjunct Faculty, 2009-2011

- Created and taught the Packaging Value Chain course to meet RIT unique needs

University of Florida. Gainesville, Florida

Adjunct Faculty. Blended, 2010-2012

- Created and taught the Consumer Packaging and Packaging Fundamentals courses to fill the gap for an absent faculty member

Academic: Research

Fraunhofer Institute - IVV, Freising, Germany

Guest Scientist, January - July 1992

- Co-developed EU standards on migration from polymers into high-fat foods SCFE/MS while a Guest Scientist at the *Fraunhofer Institut – IVV*. This led to the consistent evaluation of polymer migrants across the EU.

University of Minnesota, St Paul Minnesota

Research Assistant, Department of Food Science and Human Nutrition, 1989-1992

- Resolved moisture transfer within heterogeneous (such as granola bars and Raisin Bran) food systems identified the use of C:16 as the optimal carbon length to retard moisture migration.
- This research and the concept of using tortuosity are still used to guide the design and assess edible barriers' efficacy in retarding moisture migration.

Michigan State University

School of Packaging, Research Assistant, 1987-1989

- Developed a process to measure lipid oxidation at constant oxygen concentrations

School of Packaging, Teaching Assistant, 1987-1989

- Responsible for teaching Packaging Materials laboratory sections

Deans Graduate Assistant, College of Agriculture and Natural Resources, 1987-1989

- Managed all logistical and promotional activities associated with the *Small Animals Day* annual event
- Coordinated undergraduate recruitment for the College of Agriculture and Natural Resources

Industry Leadership

My proven ability to empower and motivate industry groups is demonstrated by my consistent track record of achievement and industry networking. I have demonstrated the ability to create networking opportunities, facilitate fundraising, and advocate for science-based decisions through symposia, webinars, and short courses, with a focus on leading the food and packaging community with the integrity, passion, and respect required in networking relationships.

Columnist

Food Technology monthly magazine

- Packaging monthly column, 2015-present
- Defined yearly calendar based on industry and research trends
- Connected with industry and research leaders to provide readers with up-to-date information

Packaging Digest

Food Science-based monthly article, 2020-present

- Identified and crafted articles on topics of interest
- Connected with industry and research leaders to provide readers with topical information

Board Activities

Editorial Boards

- Journal of Food Science Associate Editor, 2020- present
- Journal of Food Science Reviewer, 2014- present
- Packaging Science and Technology, John Wiley and Sons, Editorial Board and Reviewer, 2004 present

Institute of Food Technologists

- CoChair, Institute of Food Technologists Food Packaging Division, 1994-1995; 2017 to 2018
- Institute of Food Technologists (IFT) Executive Board, Food Packaging Division, 1990-
- Institute of Food Technologists (IFT) Higher Education Review Board (HERB), 2014-2020
- Newsletter Editor, Institute of Food Technologists Food Packaging Div 1990 to 1993
- Elected as Chairperson, Institute of Food Technologists Food Packaging Div 1993 to 1994
- Chair-Elect, Institute of Food Technologists Food Packaging Div 1992 to 1993
- Global Interests subcommittee, Institute of Food Technologists 1997 to 2000
- Task Force on Governance, Institute of Food Technologists 1997 to 1998
- National Councilor, Institute of Food Technologists 1996 to 1997

Alumni Leadership

- University of Minnesota Alumni Association and CFANS, 1992-
- Michigan State University School of Packaging Alumni Board

- Board of Directors of Michigan State University School of Packaging Alumni Association, 1996 to 2003
- Membership Committee Chair of Michigan State University School of Packaging Alumni Association, 2000-2001
- Secretary of Michigan State University School of Packaging Alumni Association 1999 to 2000

Phi Tau Sigma

- Strategic Relations & Chapter Affairs committee Phi Tau Sigma (food science honorary society), 2014-2020
- Life-time member

Pac

- pac, Co-Chair Food Waste, 2018-present

not retained

Expert Witness Legal Experience

Patents

Graham v Ring Container Technologies, LLC

Western District of Kentucky Louisville Division Case No. 3:23-cv-00110-GNS-RSE

- Expert Report

Acorn West v Berkley International and International Paper

US District Court Central District of California Case No. 2:21-cv-07821-CJC-SK

- Expert Report
- Complete 2023

Baker v Alpha

U.S. Patent No. 9,889,961 C.A. No. 18-976

- Latham & Watkins LLP
- Expert Reports
- Deposition (2)
- Complete 2021

Weber v Provisur

U.S. Patent Nos. Patent Litigation Matters: US 8,322,537; US 9,399,531; US 7,065,936; US 7,533,513; US 6,669,005; US 6,997,089; US 6,320,141

- Sterne, Kessler, Goldstein & Fox. Washington DC.
- Expert Reports
- Deposition
- Complete 2020

Inline Packaging Inc v Graphic Packaging International, Inc.

Design patent

- Winthrop and Weinstein, Minneapolis, Minnesota
- Expert Reports
- Deposition
- Complete 2020

C2R v Verde

United States Bankruptcy Court Eastern District of Wisconsin

U.S. Patent Nos. 8,475,837 and 8,535,711

- Quarles and Brady. Milwaukee Wisconsin
- Expert Report
- Deposition
- Complete 2019

Johnsonville Sausage v Klement Sausage

US District Court Case No. 2:16-CV-938

- Quarles and Brady. Milwaukee Wisconsin
- Expert Report
- Deposition

- Complete 2019

Inline Packaging Inc v Graphic Packaging International, Inc.

IPR2015-01609

- Winthrop and Weinstein, Minneapolis, Minnesota
- Declaration in support of petition for inter parties review
- Depositions
- Complete 2016

Other

HSJC Import & Export, Inc v January Foods

Superior Court in Washington

Case No: 22-2-13511-5KNT

- Expert Report
- Complete 2023

Dole Europe GMBH and Sader-Diers + Von Etdorf save Assecuranzbureau OHG v Maersk Line A/S Maria Katharina S

High Court of Justice Business and Property Court of England and Wales Queen's Bench Division. The Circuit and commercial (Mercantile) Court

Claim No. CL-2017 - 000718

- Expert Report
- Complete 2023

Santa Cruz, CA v Church and Dwight

Report in response to District Attorney Letter on violation of the California Business and Professions Code section 12606

- Complete 2022

Schoonover v. Iovate Health Sciences U.S.A.

- Expert Report
- Complete 2021

Trailblazer Food Product, Inc, v Silgan White Cap LLC

US District Court 3:2017cv00417

- David Rothwell. Portland, OR
- Expert Report
- Complete 2019

KH Enterprises Group, Inc v. Swiss Valley Farms

Cooperative Civil File No 12-cv00086.

- Faegre Baker Daniels, LLP. Minneapolis, MN
- Expert reports
- Deposition
- Complete 2019

Gordon et al. v. Nestle

Case No. BC649863, Superior Court for the State of California County of Los Angeles

- Deposition
- Complete

Escobar et al. v. Just Born

Case 2:17-cv-01826, Superior Court for the State of California County of Los Angeles

- Deposition
- Complete

ScentSational Technologies, LLC v. PepsiCo, Inc., et al.

C.A. No.: 13-cv-8645 (KMK) (LMS) (SDNY)

- Leason Ellis. White Plains, NY
- Expert report
- Deposition
- Complete 2016

Alessandro Berni, et al. v. Barilla S.p.A., et al.

Eastern District of New York 1:16-cv-04196

- Harwood Feffer LLP
- Complete

not retained

Publications

I am a peer-reviewed, frequently published columnist and author of chapters and book publications with an established ability to communicate and advocate for the industry and academia to move research and development forward. In addition, I serve on 3 Editorial Boards and am an Associate Editor.

1. Sachan, Mira and Sand, C., 2023. [Is Recycled Paperboard Safe for Food Use?](#), Packaging Digest, July
2. Sand, C., 2023. [Beefed-Up Meat Packaging Advances in Two Ways](#), Plastics Today / Packaging Digest, July
3. [Sand, C., 2023. Toward Smart\(er\) Fresh Meat Packaging](#). Food Technology, July
4. Sand, C., 2023. [Voortman's Recipe for Reclosable Cookie Packaging Success](#), Packaging Digest, June
5. Sand, C., 2023. [Progressive Produce Packaging](#). Food Technology, May
6. Sand, C., 2023. [4 Packaging Lessons from Kiwi's Global Supply Chain](#), Packaging Digest, April
7. Sand, C., 2023. [5 Food Packaging Insights from Australia](#), Packaging Digest, March
8. Sand, C., 2023. [Less Packaging, More Sustainability](#), Food Safety Magazine, March
9. Sand, C., 2023. [Packaging and Sustainability: Achieving More Sustainable Confectionery Packaging](#), The Manufacturing Confectioner, February
10. Sand, C., 2023. [6 Packaging Reductions That Don't Increase Food Waste](#), Packaging Digest, February
11. Sand, C., 2023. [5 Food Packaging Science Breakthroughs to Use in 2023](#), Packaging Digest, January
12. Sand, C., 2022. [Maricel Maffini on Chemicals of Concern](#). Food Technology, December
13. Sand, C., 2022. [In Pursuit of Clean Packaging with No Chemicals of Concern](#) Food Safety Magazine, December
14. Sand, C., 2022. [Cool New Tech to Extend Food Packaging Shelf Life](#), Packaging Digest, December
15. Sand, C., 2022. [E-Commerce Packaging Delivers](#). Food Technology, November
16. Sand, C., 2022. [How to Retain Your Retiree's Packaging Expertise](#), Packaging Digest, November
17. Sand, C., 2022. [How to Avoid Chemicals of Concern in Food Packaging](#), Packaging Digest, October
18. Sand, C., 2022. [Top Packaging Challenges: Getting It and Making it Count](#). Food Technology, September
19. Sand, C., 2022. [Flexible Packaging at a Critical Crossroads in Sustainability](#), Packaging Digest, August
20. Sand, C., 2022. [Less Trash Talk: Recycling More Film and Paperboard Packaging](#). Food Technology, July
21. Sand, C., 2022. [Gordon Robertson: Rational Thoughts on Sustainable Packaging](#). Food Technology, May
22. Sand, C., 2022. [3 Reasons to Reassess Reclosable Flexible Packaging Now](#), Packaging Digest, May
23. Sand, C., 2022. [Serving up well-done food service packaging](#). Food Technology, April
24. Sand, C., 2022. [Packaging Helps Fight Food Insecurity Due to War and Climate Change](#), Packaging Digest, March
25. Sand, C., 2022. [Ted Labuza talks Reaction Rates and Packaging](#). Food Technology, March

26. Sand, C., 2022. [Making Packaging Tradeoffs for Commercialization](#). Food Technology, February
27. Sand, C., 2022. [4 Vital Shelf-Life Prediction Methods for Food Packaging](#), Packaging Digest, January
28. Sand, C., 2021. [Sustainability's 4th Wave](#). Food Technology, December
29. Sand, C., 2021. [A Guide to 6 Seal Test Methods for Food Packaging](#). Packaging Digest, November
30. Sand, C., 2021. [Speaking Sustainably: changing consumer perspectives around packaging and food waste](#) Supermarket Perimeter, November
31. Sand, C., 2021. [Packaging Science increases Food Access](#). Food Technology, November
32. Sand, C., 2021. [Protecting Nutraceuticals with Packaging](#). Food Technology, October
33. Sand, C., 2021. [Rethinking Barrier Films, Food Waste and the Circular Economy](#) Flexible Packaging, October
34. Sand, C., 2021. [Advanced Packaging Technology for Enhanced Food Safety and Protection](#) Packaging 360, September
35. Sand, C., 2021. [Controlling Moisture in Food Using Packaging](#). Food Technology, September
36. Sand, C., 2021. [3 Solutions to Ensure Supply Chain Resiliency](#) Packaging Digest, September
37. Sand, C., 2021. [5 Ways to Be Proactive on Slack Fill](#) Packaging Digest, August
38. Sand, C., 2021. [Advanced Sterilization Technologies Unwrap Packaging Potential](#). Food Technology, August
39. Sand, C., 2021. [Help Fuel US Packaging Circularity by July 20th](#) Packaging Digest, July
40. Sand, C., 2021. [Meat Packaging Design Capture Consumers' Attention](#). Food Technology, July
41. Sand, C., 2021. [Packaging Protects Seafood Packaging](#). Food Technology, June
42. Gooch, M. and Sand, C., 2021. [Unwrapping the Arguments ... Solving packaging and food waste through government/industry collaboration](#) VCM International, May
43. Sand, C., 2021. [Packaging Strategies to Stall Lipid Oxidation](#). Food Technology, May
44. Sand, C., 2021. [Packaging Possibilities Podcast](#) Packaging Digest, May
45. Sand, C., 2021. [Produce Packaging](#). Food Technology, April
46. Sand, C., 2021. [Packaging Can Solve Our Food Waste Conundrum](#). Packaging Digest, April
47. Sand, C., Muncke, J., Lilienfeld, R., Robertson, G., 2021. [Are Biodegradable Additives for Food Packaging a Solution? No, They Make It Worse](#) Packaging Digest, March
48. Sand, C., 2021. [Multilayer Packaging Continues to Make its Mark](#). Food Technology, March
49. Sand, C., 2021. [Antimicrobials Grant Superpowers to Food Packaging](#), Packaging Digest, March
50. Sand, C., 2021. [Internet of Packaging Will Energize Food Packaging](#). Packaging Digest, January
51. Sand, C., 2021. [Wanted: Packaging Professionals to Share Knowledge](#) Packaging Digest, February
52. Sand, C., 2021. [How to Pick of CoPacking Partner](#). Food Technology, February
53. Sand, C., 2021 [Orchestrating More Sustainable Reusable Packaging](#). Food Technology, Dec-January
54. Boz, Z., Sand, C., Korhonen, V., 2020. [Consumer Research on Packaging Sustainability- Summary and Research Direction](#). Sustainability
55. Boz, Z. and Sand, C., 2020. [The combined effects of nutrient loss and food waste for tomatoes, spinach, and kidney beans as a function of processing conditions](#). Journal of Food Process Engineering.
56. Sand, C., 2020. [5 Ways Active Packaging Has Staying Power](#). Packaging Digest, November
57. Sand, C., 2020. [Packaging Solutions that Prevent Food Waste](#). Packaging Digest, October

58. Sand, C.,2020. [Packaging for Sweet Treats](#). Food Technology, November
59. Sand, C.,2020. [Antimicrobial Packaging on the Rise Again](#). Food Technology, October
60. Sand, C.,2020. [Beta, XR, AI, and Big Data Advance Food Packaging](#). Food Technology, September
61. Sand, C., 2020.[Food Packaging Expert Discloses Exciting Development and Issues](#), Packaging Digest, September
62. Sand, C.,2020. [Dawn of the Packaging Value Chain](#). Food Technology, August
63. Sand, C.,2020. [The Role of Metal in Food Packaging](#). Food Technology, July
64. Sand, C.,2020. [IFT20 Scientific Sessions Explore the Power of Plant Protein](#) Food Technology, June
65. Sand, C.,2020. [Active Packaging](#). Food Technology, April
66. Sand, C.,2020. [Packaging to meet Shelf Life Goals](#). Food Technology, March
67. Sand, C.,2020. [How IoP can Connect the Food Packaging Value Chain](#). Food Technology, February
68. Sand, C.,2020. [Food Entrepreneurs Package Innovation](#). Food Technology, January
69. Sand, C.,2019. [Glass Packaging Adds Value](#). Food Technology, December
70. Sand, C.,2019. [Compostable Packaging Complexities](#). Food Technology, November
71. Sand, C.,2019. [Frozen Food Packaging](#). Food Technology, October
72. Sand, C.,2019. [Global Packaging Research](#). Food Technology, September
73. Sand, C.,2019. [Post IFT Show](#). Food Technology, August
74. Sand, C.,2019. [Seal Integrity](#). Food Technology, July
75. Sand, C.,2019. [The Dynamics of Recycling](#). Food Technology, June
76. Sand, C.,2019. [IFT Preview](#). Food Technology, May
77. Sand, C.,2019. [Snack Packaging](#). Food Technology, April
78. Sand, C.,2019. [Paperboard Packaging has a Bright Future](#). Food Technology, March
79. Sand, C., and Robertson, G. 2018. [Packaging Waste Reduction](#). Food Technology, February
80. Sand, C.,2019. [Bakery Packaging](#). Food Technology, January
81. Sand, C.,2018. [E-commerce Packaging Demands Efficiency](#). Food Technology, December
82. Boz, Z. and Sand, C., 2018. [Packaging that Communicates Freshness](#). Food Technology, November
83. Sand, C.,2018. [Raising the Bar: High Barrier Polymers](#). Food Technology, October
84. Sand, C., 2018. [Packaging Resonates at IFT18](#). Food Technology, September
85. Sand, C., 2018. [Packaging Quenches Thirst for Beverages](#). Food Technology, August
86. Sand, C., 2018. [Bio-Derived Polymers for Food Packaging](#). Food Technology, July
87. Sand, C., 2018. [A Lot to Pack in at IFT18](#). Food Technology, June
88. Sand, C., 2018. [Package Testing](#). Food Technology, May
89. Sand, C., 2018. [Packaging Laws and Regulations](#). Food Technology, April
90. Sand, C., 2018. [Pet Food Packaging](#). Food Technology, March
91. Sand, C., 2018. [Future of Food Packaging](#). Food Technology, February
92. Sand, C., 2018. [Packaging to Keep Produce Fresh](#). Food Technology, January
93. Sand, C., 2017. [Value -Added Packaging](#). Food Technology, December
94. Sand, C., 2017. [Materials for Increased Packaging Sustainability](#). Food Technology, November
95. Sand, C., 2017. [Ingredient Packaging Close-up](#). Food Technology, September
96. Sand, C., 2017. [Global Approaches to Sustainable Food Packaging](#). Food Technology, October
97. Sand, C., 2017. [Packaged to Preserve](#). Food Technology, July
98. Sand, C., 2017. [Vetting Food Packaging](#). Food Technology, June

99. Sand, C., 2017. [Packaging Opportunities Are Nicely Bundled at IFT17](#). Food Technology, May
100. Sand, C., 2017. [Business Case for Reducing Food Waste](#). Food Technology, April
101. Sand, C., 2017. [Food Service Craves Packaging](#). Food Technology, March
102. Sand, C., 2017. [Barrier packaging](#). Food Technology, February
103. Sand, C., 2017. [Packaging Solutions for Clean Label Products](#). Food Technology, January
104. Sand, C., 2016. [Packaging Shapes Up and Feels Great](#). Food Technology, December
105. Sand, C., 2016. [Innovations in Plastic Food Packaging](#). Food Technology, November
106. Sand, C., 2016. [Increasing Agility in the Packaging Value Chain](#). Food Technology, October
107. Sand, C., 2016. [The Packaging Scene at IFT16](#). Food Technology, September
108. Sand, C., 2016. [Pivots Package Innovation](#). Food Technology, August
109. Sand, C., 2016. [Reduce Packaging Costs](#). Food Technology, July
110. Sand, C., 2016. [Packaging Solutions at IFT](#). Food Technology, June
111. Sand, C., 2016. [MAP Expands](#). Food Technology, May
112. Sand, C., 2016. [Pet Product Packaging to Minimize Fraud](#) Food Quality & Safety, May
113. Sand, C., 2016. [Food Packaging Research](#). Food Technology, April
114. Sand, C., 2016. [Societal Factors Influence Packaging](#). Food Technology, March
115. Sand, C., 2016. [Opening Innovation with Closures](#). Food Technology, February
116. Sand, C., 2016. [Strategies to Halt Package Fraud](#). Food Technology, January
117. Sand, C., 2015. [Packaging Machinery Flexes](#). Food Technology, December.
118. Sand, C., 2015. [Intelligent Packaging Advances](#). Food Technology, November.
119. Sand, C., and Brody, A., 2015. [Packaging innovations that decrease consumer derived food waste](#). Food Technology, October.
120. Sand, C., and Brody, A., 2015. [Packaging that Sells](#). Food Technology, August.
121. Brody, A., Sand, C. Sabbagha, F., 2014. [RFID in Packaging using Value Chain](#). Food Technology. October
122. Brody, A., Sand, C., Sabbagha, F., 2014. [RFID in Packaging](#). Food Technology. September. pp79-80.
123. Sand, C., 2010. [Book-The Packaging Value Chain](#). DesTech Publishing.
124. Sand, C., 2009. [Chapter-Packaging sustainability and bio-degradable films and packaging in Modified Atmosphere Packaging MAP for Fresh-cut Fruit and Vegetables](#) Brody, Han, Hong.
125. Sand, C.K., 2009. Food Service Packaging. Wiley Encyclopedia of Packaging Technology.
126. Casper, D.F., and Sand, C.K., 2009. Specifications and Quality Procedures. Wiley Encyclopedia of Packaging Technology.
127. Brody, A., Bugusu, B., Han, J., McHugh, T., Sand, C.K., 2008. [Scientific Status Summary: Innovative Food Packaging Solutions](#). Food Technology.
128. Sand, C., 2007. [Book-Understanding and Executing Sustainability Initiatives and Sustainable Packaging Programs](#). Packaging Strategies.
129. Sand, C.K. and Blakistone, B., 2007. Using packaging technologies to respond to Consumer, Retailer, and Seafood Industry needs. Proceedings from International Smoked Fish Conference March. Anchorage, Alaska.
130. Sand, C.K., 1996. Translating Consumer Needs into the Package. Packaging Yearbook, 1996. Washington DC. Editor Blakistone, B. pp 98-114.
131. Sand, C.K., 1996. Specifications and Quality Assurance. The Wiley Encyclopedia of Packaging Technology. New York. Editor Brody, A. 849-852.
132. Koelsch, C.M., 1994. Edible Barriers: A Review of their Properties and Promise. Trends in Food Sci. and Tech. 5 (3): 76-81.

133. Koelsch, C.M. and Labuza, T.P., 1992. Functional, Morphological and Physical Properties of Edible Fatty Acid Based Barriers. *Lebensm. Wiss. und Technol.* 25: 404-411.
134. Koelsch, C.M. and Labuza, T.P., 1991. Plastic, Packaging and Municipal Solid Waste: The Current Controversy I and II. *Cereal Foods World.* 36 (1): 44-52; 36 (3): 284-298.
135. Koelsch, C.M., Downes, T.W., and Labuza, T.P., 1991. A System and Kinetic Expressions for the Measurement of Hexanal Formation via Lipid Oxidation as a Function of Oxygen Concentration. *Journal of Food Sci.* 56 (3): 816-834.
136. Hong, Y.C., Koelsch, C.M., and Labuza, T.P., 1991. Using the L# to Predict the Efficacy of Moisture Barrier Properties of Edible Food Coating Materials. *J. Food Proc. Pres.* 15: 45-62.

not retained

Presentations, Panels, Webinars, and Short Courses

1. Sand, C., 2023. [What Are Creative Solutions for Addressing Food Waste Across the F&B Value Chain? / Use of Bayesian Networks to Make More Sustainable Food Packaging Choices That Prevent Food Waste.](#) IFT First Conference. July
2. Sand, C., 2023. [Interview for The Atlantic: Compostable Plastic Is Garbage](#)
3. Sand, C., 2023. [Industry solutions to phase out PFAS and other chemicals of concern in packaging.](#) Chemical Watch - by Enhesa Food Contact Regulations USA 2023 event. June.
4. Sand, C., 2023. [Challenges Related to PFAS in Packaging.](#) Food Safety Summit. May
5. Sand, C., 2023. [Future of Food Packaging | More Sustainable Food Packaging.](#) University of Wisconsin-Madison. May.
6. Sand, C., 2023. [Understanding PFAS: Regulations, Sources, Chemistry, and Alternatives.](#) Mérieux webinar. April
7. Sand, C., 2022. [Implications of Shelf Life at the Extremes.](#) Shelf-Life International Meeting (SlIM). Bogota, Colombia. November
8. Sand, C., 2022. [Top Three Packaging Solutions to Prevent Food Waste.](#) Global Pouch Forum. Chicago. June
9. Sand, C., 2022. The Role of Packaging in Food Waste Reduction Efforts. ReFED Food Waste Summit. May
10. Sand, C., 2022. Bio-industrial Materials, Trends and Opportunities. AURI New Uses Forum, March.
11. Sand, C., 2021. Leading trends, challenges and opportunities that relate to establishing a circular economy for plastics packaging. Canadian Produce Marketing Association (CPMA), November.
12. Sand, C., 2021. Role of packaging science and mobile processing in preventing food waste. FAO. International Day of Awareness of Food Loss and Waste. September 2021
13. Sand, C., 2021. Reducing food waste with packaging - Intelligent packaging & Antimicrobial packaging. IFT Non Thermal Processing Short Course. October.
14. Sand, C., 2021. ReFED panel on Maximize Product Utilization: Panel Detail. August.
15. Sand, C., 2021. Keeping Packaged Food Safe - Implications of New Regulations and Test Methods for Assessing Direct Contact Food Packaging, IFT Annual meeting. June.
16. Sand, C., 2021. WIP-Keeping Packaged Food Safe - Implications of New Regulations and Test Methods for Assessing Direct Contact Food Packaging. University of Minnesota, Environmental Series. March.
17. Sand, C., 2021. Panelist on the role of packaging and mobile processing to align with need for supply chain resiliency and prevent food waste. World Bank. May.
18. Sand, C., 2021. Packaging Technology Advancements and their Implementation to Prevent Food Waste. Sustainable Packaging Coalition. May.
19. Sand, C., 2021. The Most Recent Anti-Microbial Packaging Research and Applications for Foods with Improved Safety, Quality, and Sustainability. Engineering Days. May.
20. Sand, C., 2021. More Sustainable Food System. Phi Tau Sigma. Louisiana State University. May.
21. Sand, C., 2020. More Sustainable Packaging for Entrepreneurs. GrowNorth webinar. October.
22. Sand, C., 2020. More Sustainable Packaging Solutions to Improve Consumer Confidence in Ground Beef. AURI webinar. November.

23. Sand, C., 2020. Keeping Food Safe using the Packaging Value Chain. SPE-IoPP Webinar. October.
24. Sand, C., 2020. [Interview for AURI \(Agricultural Utilization Research Institute\): More Food Recovery Opportunities, Less Food Waste](#), July
25. Sand, C., 2020. Leveraging Protein Waste with Novel Products. IFT. July.
26. Sand, C., 2020. Leveraging Protein Waste with Novel Products. IFT. July.
27. Sand, C., 2020. Comparative LCA-Based Approaches to Assessing the Sustainability of Packaging: A Comparison of Toolkits, ISO Regulations, and DEA. IFT. July.
28. Sand, C., 2020. Beta, XR, AI, and Big Data Advance Food Packaging. Riester-Davis-Brody Life-time Achievement session. IFT. July.
29. Sand, C., 2020. Building the Business Case for Food Loss and Waste and Stakeholder Engagement. AURI webinar. April.
30. Sand, C., 2020. Incorporating More Sustainable Packaging Materials with System Solutions. ACS Philadelphia
31. Sand, C., 2020. Packaging for a more sustainable Food System. Packaging & Processed Foods: Eating Well, Eating Sustainably. Baton Rouge
32. Sand, C., 2019. More Sustainable Food Packaging Innovations. National Academy of Sciences
33. Sand, C.K., 2019. Economics of food waste reduction as a function of packaging solutions: building the business case for packaging solutions to food waste. Food Packaging, Shelf Life, and Food Safety conference. Munich. Fall 2019
34. Sand, C.K., 2019. Toward More Sustainable Packaged Food More Sustainable Packaging and Less Food Waste. Convergence. McGill.
35. Sand, C.K., 2019. Consumer/Market Drivers and Direction for More Sustainable Packaged Food. IFT Webcast.
36. Boz, Z., Parra, J., and Sand, CK, 2019. Migration from Packaging - Concerns and Opportunity. IAPRI Netherlands. June 2019
37. Sand, C.K., Boz, Z., Korhonen, V., 2019. Current Issues and Advances in Consumer Research and Testing for Sustainable Packaging. IAPRI, Netherlands. June 2019
38. Boz, Z., Parra, J., and Sand, C., 2019. Recent Challenges and Advances in Migration from Packaging Materials into Foods. IFT Annual meeting June 2019
39. Sand, C.K., 2019. Quantifying the impact of packaging solutions to reduce food waste in Symposia entitled Packaging solutions to reduce food waste: Packaging Case studies. IFT Annual meeting June 2019
40. Sand, C.K., 2019. Packaging for food waste minimization in symposia: Food loss and waste minimization in fruit and vegetable chains: global perspectives and opportunities for transformation into high-value products and ingredients. IFT Annual Meeting. June 2019
41. Sand, C.K., 2018. Symposia Co-Chair: Packaging solutions to reduce food waste: Packaging Case studies. IFT Annual Meeting. June 2019
42. Sand, C.K., 2018. Sustainable packaging and its role in reducing food waste. luFoST, Mumbai, October 2018.
43. Sand, C.K., 2018. Symposia Co-Chair: New Packaging Materials to Address Sustainability. luFoST, Mumbai, October 2018.
44. Sand, C.K., 2018. Keynote: Packaging with more value. Keynote Food Tech Summit & Expo Mexico. September 2018.
45. Sand, C.K., 2018. The Role of Intelligent Packaging and the Internet of Things. Food Engineering conference. Symposia Chair. Minneapolis. September 2018

46. Sand, C.K., 2018. Symposia Co-Chair: Food Packaging and Shelf Life. Food Engineering conference. Minneapolis. September 2018
47. Sand, C.K., 2018. The future of Intelligent packaging. IFT. Chicago. July 2018
48. Sand, C.K., 2018. Symposia Co-Chair: The future of food packaging. IFT. Chicago. July 2018
49. Sand, C.K., 2018. Packaging value chain. Pac Webinar.
50. Sand, C.K., 2018. Packaging technologies and value chain concepts to advance value-added pulse-based foods. McGill Convergence Innovation Webinar
51. Sand, C.K. and Boz, Z., 2018. Nutrient Loss as a Function of Packaging, Processing and Food Waste for Tomatoes, Peaches, Kidney Beans, and Spinach. International Association of Packaging Research Institutes Zhuhai, China. June 2018
52. Sand, C.K., 2017. Packaging technologies and value chain concepts to advance value-added pulse-based foods. Convergent Innovation Webinar Series. McGill. Montreal. March 2017
53. Sand, C.K., 2017. Packaging technologies and value chain concepts to advance value-added pulse-based foods. Convergent Innovation Webinar Series. McGill. Montreal. March 2017.
54. Sand, C.K., 2017. Tactical packaging challenges and solutions for fresh seafood. Louisiana. January 2017
55. Sand, C.K., 2017. Packaging value chain. IFT FPD Webinar
56. Sand, C.K., 2016. Food Packaging Research Needs. IFT Annual convention, Chicago, IL July 2016
57. Sand, C.K. 2015. Enabling your Innovations using the Packaging Value Chain. AMI Multilayer films conference. Chicago, June 3, 2015
58. Sand, C.K. 2015. GFSI, BRC, SQF and Beyond: Where Food Safety is Heading and Packaging's Role in Getting Us There. ADS Annual Technical Meeting San Antonio, Texas. May 5, 2015
59. Sand, C.K. 2015. Bringing in Innovation with the Packaging Value Chain. IFT Webcast February 26, 2015
60. Sand, C.K. 2014. Influence of Packaging on Flavors in Foods. Flavor Short Course. University of Minnesota, St. Paul, MN
61. Sand, C.K., 2014. Interview for Wall Street Journal: See-Through Food Packaging Boosts Sales Clear Packages Draw Shoppers But Are Very Tricky; What's Best Left Unseen
62. Sand, C.K. 2008. Research Developments and Needs in Sustainable Packaging Metrics. IFT Panel. IFT Annual meeting. New Orleans, LA
63. Sand, C.K., 2008. IFT Short Course Speaker on packaging for Food Science for non Food Scientists. IFT Annual meeting. New Orleans, LA
64. Sand, C.K., 2008. Exercising Sustainable Packaging in the Sports Drinks Arena: New Technologies in Food Packaging that Enhance Shelf Life, Wellness, and Sustainability, Developing and Marketing Products for Consumer Health & Wellness. Rosemont, IL
65. Sand, C.K., 2008. Sustainability will Drive the Packaging Value Chain. Packaging Executives Forum, E. Lansing, MI
66. Sand, C.K., 2007. More Sustainable Food Packaging. Quality Assurance Association. Edina, MN
67. Sand, C.K., and Brody, A., and Rubino, M., 2007. Food Packaging for Food Scientists. IFT Annual meeting. Chicago, IL
68. Sand, C.K. and Blakistone, B., 2007. Using packaging technologies to respond to Consumer, Retailer, and Seafood Industry needs. International Smoked Fish Conference March. Anchorage, Alaska

69. Sand, C.K., 2007. More Sustainable Food Packaging. Quality Assurance Association. Edina, MN
70. Sand, C.K. 2007. Food packaging Innovations Needed to Respond to Sustainability Initiatives. IFT Panel. IFT Annual meeting. Chicago, IL
71. Sand, C.K., 2003. Appleton on-site training session. Appleton, WI
72. Sand, C.K., 2003. On-campus training session for Appleton. University of Wisconsin-Stout.
73. Sand, C.K., 2002. Teaching in the Laptop Environment. IAPRI Conference Worldpak. E. Lansing, MI, MSU
74. Sand, C., 2001. Researcher of the Year Nominee ation. University of Wisconsin-Stout.
75. Sand C.K., 2000. Package and Product Development for Beginners at Bringing Profit Back to the Farm in Eau Claire for University of Wisconsin cooperative extension service February 2000

Education

- Ph.D., Food Science, and Nutrition, University of Minnesota, 1992
 - Additional coursework in Strategic Management and Chemical Engineering
- M.S., Packaging, Michigan State University, 1989
- B.S., Packaging, Michigan State University, 1986