

Curriculum Vitae

Personal Details

First name	Joseph
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Address	Stauffacherstrasse 147
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Birth date	11.10.1987
Email	joseph.dumpler@hest.ethz.ch
Status	Research Associate

Professional Experience

July 2022-present	Senior Researcher <i>Senior Researcher at the Sustainable Food Processing (SFP) Laboratory at ETH Zurich</i>
October 2021-June 2022	Research Associate <i>Research Associate at the Department of Food Science, Cornell University, Ithaca, NY</i>
June 2019-August 2021	Postdoctoral Associate <i>Postdoctoral Research Associate at the Department of Food Science, Cornell University, Ithaca, NY</i> <i>Projects: Microwave vacuum drying of concentrated skim milk, cheese and cream, Forward osmosis concentration of fruit juices and cold brew coffee</i>
March 2017-May 2019	Bergader Privatkäserei, Waging am See, Germany <i>Process improvement and project manager at a private dairy company specialized in blue veined cheese, Emmental type, and surface ripened cheeses</i>

Teaching Experience

June 2022	Innovative Technologies for Food: Preservation of concentrated milk – Technological, economic and ecological aspects, SS2022 <i>Technical University of Munich – TUM School for Life Sciences Weihenstephan</i>
March 2022	FDSC6000: Microwave vacuum drying <i>Cornell University, Department of Food Science, Ithaca, NY, USA.</i>
March 2022	FDSC6650: Microwave heating and microwave vacuum drying <i>Cornell University, Department of Food Science, Ithaca, NY, USA.</i>
January 2020-present	FDSC4250/6250 - Part 1: Dairy Processing as a Case Study for Food Processing. Food Science Undergraduate Program <i>In collaboration with Dr. Carmen Moraru. Lecture on cleaning in place and lab section of all hands-on training for students.</i> <i>Cornell University, Department of Food Science, Ithaca, NY, USA.</i>

June 2017- May 2019	Technology of Milk and Milk Products, SS2017-2019: Technology of Cheese II <i>Technical University of Munich – TUM School for Life Sciences Weihenstephan</i>
March 2018- April 2019	Thermal Process Engineering: Heat Transfer, Reaction Kinetics, Thermodynamics, Evaporation <i>University of Applied Sciences Upper Austria, Wels, Austria</i>
March 2012- March 2017	Innovative Technologies for Food, SS2014-2016: Microencapsulation & Nanoparticles Dairy Technology, SS2016: Fluid Milk Processing Process-oriented Bio- and Food Technology, SS2012-2017: Chemical and Physical Principles, SS2014: Emulsions Process-oriented Bio- and Food Technology for Nutrition Science, WS2013- 2017: Chemical and Physical Principles <i>Technical University of Munich – TUM School for Life Sciences Weihenstephan</i>

Education

March 2012- March 2017	PhD Thesis Technical University of Munich – TUM School for Life Sciences Weihenstephan, Chair for Food and Bioprocess Engineering Supervision: Prof. Dr.-Ing. U. Kulozik <i>On the heat stability of concentrated milk systems - Kinetics of heat-induced dissociation and aggregation of casein micelles</i> grade: summa cum laude/passed with highest distinction
April 2008- February 2012	Food Technology and Biotechnology, Diploma, Dipl.-Ing. (Univ.) Technical University of Munich – TUM School for Life Sciences Weihenstephan Diploma thesis: <i>Technology and storage induced changes in lipids of millet (Panicum miliaceum L.);</i> grade: 1.8
October 2007- February 2008	Food Chemistry, State Examination, 1. Semester Technical University of Munich - Garching campus
September 1998- June 2007	Abitur, General Qualification for Higher Education Hertzhaimer-Gymnasium Trostberg, Bavaria; grade: 1.7

Achievements – Workshops – Scholarships

October 2018	Award for the Best PhD Thesis of the Year Verband Weihenstephaner Milchwirtschaftler, Bio- und Lebensmitteltechnologien e.V., Freising
April 2018	Julius Maggi Research Award, 1st place 12 th European PhD Workshop on Food Engineering and Technology, Freising- Weihenstephan, Germany
April 2016	Trophelia 2016 with “freustück” (supervisor) 2 nd place, granted by the Research Association of the German Food Industry (FEI), Bonn, Germany
October 2015	J.T.M. Wouters Young Scientist Award

	3 rd place at the 9th NIZO Dairy Conference in Papendal, The Netherlands for an outstanding contribution
August 2014	MCC Summer Academy 2014, Budapest, Hungary
	The problems of global agriculture and the food industry in the European Union, August 18-26
March 2012- November 2013	Scholarship of the Bayerische EliteAkademie, Munich
	An excellence program for engaged students from all of Bavaria's universities on their way to becoming responsible leaders in the future
November 2011	Aptitude for instructors exam
November 2008	Kann-Rolle 2020
	An idea competition and workshop for innovative honey products; the product concept presented was within the best 20 ideas

Manuscript Drafts

Dumpler J, Moraru CI (2022) A process optimization approach for microwave vacuum drying of concentrated skim milk. *Journal of Dairy Science*

Peer Reviewed Publications

Dumpler J, Moraru CI (2022) Modeling the drying kinetics of microwave vacuum drying of concentrated skim milk: correlation of dielectric properties, drying stages, and specific energy demand on pilot scale. *Drying Technology*. doi:10.1080/07373937.2022.2080220

Dumpler J, Huppertz T, Kulozik U (2020). Invited review: Heat stability of milk and concentrated milk: Past, present, and future research objectives. *J Dairy Sci* 103(12):10986-11007. doi:10.3168/jds.2020-18605

Hartinger M, Schiffer S, Heidebrecht H-J, Dumpler J, Kulozik U (2020) Milk protein fractionation by custom-made prototypes of spiral-wound microfiltration membranes operated at extreme crossflow velocities. *J Membrane Sci* 605:118110. doi: 10.1016/j.memsci-2020.118110

Hartinger M, Schiffer S, Heidebrecht, H-J, Dumpler J, Kulozik U (2019) Investigation on the spatial filtration performance in spiral-wound membranes – Influence and length-dependent adjustment of the transmembrane pressure. *J Membrane Sci* 591:117311. doi: 10.1016/j.memsci.2019.117311

Hartinger M, Heidebrecht H-J, Schiffer S, Dumpler J, Kulozik U (2019) Technical concepts for the investigation of spatial effects in spiral-wound microfiltration membranes. *Membranes* 9:80. doi: 10.3390/membranes9070080

Hartinger M, Heidebrecht H-J, Schiffer S, Dumpler J, Kulozik U (2019) Milk protein fractionation by means of spiral-wound microfiltration membranes: Effect of the pressure adjustment mode and temperature on flux and protein permeation. *Foods* 8:180-197. doi:10.3390/foods8060180

Dumpler J, Peraus F, Depping V, Stefánsdóttir B, Grunow M, Kulozik U (2017) Modelling of heat stability and heat-induced aggregation of casein micelles in concentrated skim milk using a Weibullian model. *Int J Dairy Technol* 71:1-12. doi: 10.1111/1471-0307.12501

Dumpler J, Wohlschläger H, Kulozik U (2017) Milk ultrafiltrate analysis by ion chromatography and calcium activity for SMUF preparation for different scientific purposes and prediction of its supersaturation. *Int Dairy J* 68:60–69. doi:10.1016/j.idairyj.2016.12.009

Dumpler J, Wohlschläger H, Kulozik U (2017) Dissociation and coagulation of caseins and whey proteins in concentrated skim milk heated by direct steam injection. *Dairy Sci & Technol* 96:807-826. doi:10.1007/s13594-016-0304-3

Depping V, Grunow M, van Middelaar C, Dumpler J (2016) Integrating environmental assessment in new product development and processing technology selection: milk concentrates as substitutes for milk powders. *J Cleaner Prod* 149:1-10. doi:10.1016/j.jclepro.2017.02.070

Dumpler J, Kulozik U (2016) Heat-induced coagulation of concentrated skim milk heated by direct steam injection. *Int Dairy J* 59:62–71. doi:10.1016/j.idairyj.2016. 03.009

Bulca S, Dumpler J, Kulozik, U (2016) Kinetic description of heat-induced cross-linking reactions of whey protein-free casein solutions. *Int J Dairy Technol* 69:489-496. doi:10.1111/1471-0307.12357

Kirchner B, Pfaffl MW, Dumpler J, von Mutius E, Ege MJ (2016) microRNA in native and processed cow's milk and its implication for the farm milk effect on asthma. *J Allergy Clin Immunol*, 137:1893-1895. [doi:10.1016/j.jaci.2015.10.028](https://doi.org/10.1016/j.jaci.2015.10.028)

Dumpler J, Kulozik U (2015) Heat stability of concentrated skim milk as a function of heating time and temperature on a laboratory scale – Improved methodology and kinetic relationship. *Int Dairy J* 49:111–117. [doi:10.1016/j.idairyj.2015.05.005](https://doi.org/10.1016/j.idairyj.2015.05.005)

Books and Book Chapters

Dumpler, J (2018) Heat stability of concentrated milk systems: Kinetics of the dissociation and aggregation in high heated concentrated milk systems. Wiesbaden, Germany: Springer Spektrum. [doi:10.1007/978-3-658-19696-7](https://doi.org/10.1007/978-3-658-19696-7)

Oral Presentations

Dumpler J, Moraru CI (2022) Microwave vacuum drying of cream – A novel process for the manufacturing of dehydrated shelf stable cream. ADSA. online, June 19-22

Dumpler J, Moraru CI (2021) Microwave vacuum drying of concentrated skim milk: Process optimization and powder functionality. ADSA. online, July 11-14

Dumpler J, Moraru CI (2020) Vacuum microwave drying of non-thermally concentrated milk for the manufacture of dairy powders of superior quality and functionality. Dairy promotion order advisory board. Syracuse, NY, February 20

Dumpler J, Marx M, Kulozik U, Depping V, Stefánsdóttir B, Grunow M (2018) Concentrated milk as a substitute of milk powder - Technological, economic, and ecological aspects for an efficient production. Presentation at the National Agrarian University (UNALM), Lima, Peru, April 30

Dumpler J, Kulozik U (2018) On the heat stability of concentrated milk systems - Kinetics of the dissociation and aggregation in high heated concentrated milk systems. 12th European PhD Workshop on Food Engineering and Technology. Freising-Weihenstephan, April 17-18

Dumpler J, Marx M, Kulozik U, Depping V, Stefánsdóttir B, Grunow M (2016) Milk and whey concentrates vs. dairy powders – Opportunities and challenges towards a reduced environmental impact of dairy processing. 30th EFFoST International Conference. Vienna, Austria, November 28-30

Dumpler J, Marx M, Kulozik U, Depping V, Stefánsdóttir B, Grunow M (2016) Technologische, ökonomische und ökologische Aspekte ressourcenschonender Produktion von Milch- und Molkenkonzentrat. GDL Kongress Lebensmitteltechnologie 2016. Lemgo, October 20-22

Dumpler J, Kulozik U (2014) Kristallisation von Calciumphosphat aus Ultrafiltrationspermeaten. Jahrestreffen der ProcessNet-Fachgruppen Lebensmittelverfahrenstechnik und Phytoextrakte, TU München, Freising/Weihenstephan, February 26-28

Dumpler J, Kulozik U (2016) Diafiltration and heat treatment of micellar casein concentrates – Factors affecting filtration performance and heat stability. Seminar on Emerging Dairy Technologies, Freising/Weihenstephan, September 14-16

Dumpler J, Kulozik U (2016) Milk concentrates as alternative to powder manufacture – Technical solutions for preservation with reduced economic and environmental impact. Seminar on Emerging Dairy Technologies, Freising/Weihenstephan, September 14-16

- Dumpler J, Marx M, Kulozik U, Depping V, Stefánsdóttir B, Grunow M (2016) Ressourcenschonende Produktion von Milcherzeugnissen am Beispiel von Milch- und Molkenkonzentrat. Tag der Studienfakultät Brau- und Lebensmitteltechnologie. Freising/Weihenstephan, June 24
- Dumpler J, Kulozik U (2016) Reaction kinetics of heat-induced aggregation in skim milk concentrates - Comparison of lab-scale indirect heating and direct steam injection. IDF Parallel Symposia. Dairy Products Concentration and Drying, Dublin, Ireland, April 11 – 14
- Dumpler J, Kulozik U (2015) Reaction kinetics of heat-induced aggregation in skim milk concentrates - Comparison of lab-scale indirect heating and direct steam injection. 9th NIZO Dairy Conference, Papendal, The Netherlands, September 30-October 2
- Dumpler J, Kulozik U (2015) Novel technologies for skim milk concentrates. 2. Energy saving by thermal preservation and shelf-life of concentrated skim milk as an alternative to drying. Seminar on Emerging Dairy Technologies, Freising/Weihenstephan, September 16–18
- Dumpler J, Kulozik U (2015) Novel technologies for skim milk concentrates. 1. Chemical and physical means to prevent heat-induced aggregation of casein micelles in concentrated skim milk. Seminar on Emerging Dairy Technologies, Freising/Weihenstephan, September 16–18
- Heidebrecht HJ, Hartinger M, Dumpler J, Kulozik U (2015) Assessment of polymeric spiral-wound membranes for milk protein fractionation, Euromembrane, Aachen, September 6-10
- Dumpler J, Kulozik U (2015) Kinetic description of UHT induced aggregation in milk concentrates - Comparison of direct steam injection and lab-scale indirect heating. ICEF 12 - International Congress on Engineering and Food, Québec City, Canada, June 14-18
- Kulozik U, Marx M, Dumpler J (2014) Neue ressourcen- und energiesparende Prozesse zur Herstellung, Vertrieb/Logistik und Einsatz von Milch- und Molkekonzentraten als Ersatz für Milch- und Molkepulver. BLE Innovationstage 2014 - Neue Ideen für den Markt, Bonn, October 15-16
- Dumpler J, Kulozik U (2014) „Quo vadis Magermilchkonzentrat?“ Lösungsansätze für (ultra)hocherhitzbare Magermilchkonzentrate hoher Trockenmasse. Milchwissenschaftliche Herbsttagung, Freising/Weihenstephan, October 9-11
- Marx M, Dumpler J, Kulozik U (2013) Neue Erkenntnisse zur Erhitzung und Stabilität von Milch- und Molkenkonzentraten. Milchwissenschaftliche Herbsttagung, Freising/Weihenstephan, October 10-11
- Dumpler J, Kulozik U (2013) Heat stability of concentrated skim milk as a function of pH. Dairy Conference 2013, Universität Hohenheim/Stuttgart, September 16-17
- Dumpler J, Kulozik U (2012). Grundlagen und Mechanismen der Strukturbildung bei der Gelbildung durch Proteine und Hydrokolloide. Technologieseminar 2012 - Verfahrens- und Strukturoptimierung in der Lebensmittelherstellung, Freising/Weihenstephan, October 25-26

(underlined: presenting author)

Poster Presentations

Dumpler J, Moraru CI (2022) Microwave vacuum drying of the dairy products milk, cheese and cream: Product and process considerations. IFT22 Annual Meeting & Food Expo, Chicago, IL & online, July 10-14

Beldie AA, Dumpler J, Moraru CI (2021) Screening of draw solutes for forward osmosis in liquid food applications. IFT first - Food Improved by Research, Science, & Technology, online, July 19-23

Gong BJ, Dumpler J, Moraru CI (2021) Cheese puffs obtained by microwave vacuum drying: effect of processing parameters on product properties. IFT first - Food Improved by Research, Science, & Technology, online, July 19-23

Dumpler J, Moraru CI (2020) Forward osmosis: Screening of potential draw solutes for food applications based on performance criteria. IFT20 Annual Meeting & Food Expo, online, July 13-15

Heidebrecht HJ, Hartinger M, Dumpler J, Kulozik U (2015) Milk protein fractionation with spiral-wound membranes to obtain native protein fractions. IDF World Dairy Summit, Vilnius, Lithuania, September 20-24

Dumpler J, Kulozik U (2015) Reaction kinetics of heat-induced aggregation in skim milk concentrates - Comparison of lab-scale indirect heating and direct steam injection. 9th NIZO Dairy Conference, Papendal, The Netherlands, September 30-October 2

Heidebrecht HJ, Dumpler J, Kulozik U (2015) Thermal stability of bovine immunoglobulins during processing - Kinetic considerations. ICEF 12 - International Congress on Engineering and Foods, Québec, Canada, June 14-18

Dumpler J, Kulozik U (2014) Changes in the composition of milk serum and its influence on heat stability of concentrated milk. 15th Food Colloids Conference, Karlsruhe, April 13-16

Project Proposals (granted and funded)

Dumpler J, Moraru CI (2020) Microwave vacuum dehydrated, shelf stable cream. New York State Dairy Promotion Order Advisory Board, New York State Department of Agriculture and Markets.

Dumpler J, Dando R, Moraru CI (2020) Cheese snack products: consumer trends and a novel manufacturing approach using vacuum microwave drying technology. National Dairy Council (NDC) Product Research Funding Application.

Heidebrecht HJ, Dumpler J, Kulozik U (2014) Milchproteinfraktionierung mittels Mikrofiltration: Einfluss des Diafiltrationsmediums auf Deckschichtbildung, Transmission und Funktionalität der der Proteinfraktionen, Allianz Industrieller Gemeinschaftsforschung (AIF-FEI).

Heidebrecht HJ, Dumpler J, Kulozik U (2014) Einsatz von polymeren Spiralwickelmembranen zur Milchproteinfraktionierung. Allianz Industrieller Gemeinschaftsforschung (AIF-FEI).

Patents

Dumpler J, Ederer C, Kulozik, U (2014) Injektor und Verfahren zum Einleiten eines gasförmigen Wärmeträgers in ein flüssiges Produkt. Review and release of the invention by Bayerische Patentallianz April 15.