

# DAVID JULIAN McCLEMENTS

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## Education

University of Leeds, UK, Doctor of  
Philosophy in Food Science, 1985-1989

University of Leeds, UK, Bachelor of  
Science in Food Science (Hons), 1981-  
1985

## Professional Experience

*July, 2005 to Present*  
Professor, Department of Food Science,  
University of Massachusetts, Amherst

*July, 2000 to July, 2005*  
Associate Professor, Department of Food  
Science, University of Massachusetts,  
Amherst

*September, 1994 to July, 2000*  
Assistant Professor, Department of Food  
Science, University of Massachusetts,  
Amherst

*March, 1994 to September, 1994*  
Senior Research Fellow, Department of  
Food Chemistry, University College  
Cork, Ireland

*January, 1992 to February, 1994*  
Senior Research Fellow, Department of  
Food Science and Technology, University  
of California, Davis

*January, 1992 to February, 1994*  
Research Fellow/Senior Research Fellow,  
Department of Food Science, University  
of Leeds, UK

## Honors and Awards

*8<sup>th</sup> Ranked, Highly Cited Author in  
Agricultural Sciences, 1996-2006 (Ranked  
by Total Citations). Science Watch, ISI  
Thomson Scientific, Philadelphia: DJM –  
125 Papers, 1,300 citations.*

*Award for the Advancement of Agricultural  
and Food Chemistry. Agricultural and  
Food Chemistry Division, American  
Chemical Society, USA, 2006*

*Food Chemicals Codex (2005-2006),  
National Academies – Committee Member.*

*Best Paper Award, Phospholipid Division,  
AOCS, 2003. with S. Danviviyaikul, D.J.  
McClements, E.A. Decker, W.W. Nawar  
and P. Chinachoti.*

*Samuel Cate Prescott Award. Outstanding  
Ability in Research in Food Science and  
Technology, Institute of Food  
Technologists, USA, 1999*

*Young Scientist Award. Agricultural and  
Food Chemistry Division, American  
Chemical Society, USA, 1996*

*Outstanding Paper Presentation Award.  
Royal Society of Chemistry, Lipids  
Division, 1989*

*Student Award. Department of Food  
Science, University of Leeds, 1985*

## Patents

1. Decker, E.A. and McClements, D.J. 2004. Utilization of Emulsion Interfacial Engineering to Produce Oxidatively Stable Lipid Delivery Systems. USSN 10/651,783
2. McClements, D.J. & Decker, E.A. 2004. Biopolymer-encapsulation and stabilization of lipid systems and methods for utilization thereof.
3. McClements, D.J. & Decker, E.A. 2005. Composition and Procedure for Preparing Stable Acidic Beverage Emulsions.
4. McClements, D.J. & Decker, E.A. 2005. Coated Food Compositions and Related Methods of Preparation.

- McClements, D.J. & Decker, E.A. 2005. Novel Procedure for Improving Encapsulation of Particulate Materials.

## **Publications**

### **Books**

- D.J. McClements (2007). *Understanding and Controlling the Microstructure of Complex Foods*. Editor. Woodhead Publishing, Cambridge, UK.
- D.J. McClements (2004). *Food Emulsions: Principles, Practice and Techniques, 2<sup>nd</sup> Edition*, 609 pages. CRC Press. Boca Raton, Florida.
- D.J. McClements (1999). *Food Emulsions: Principles, Practice and Techniques*. CRC Press. Boca Raton, Florida, 378 pages.
- E. Dickinson and D.J. McClements (1995). *Advances in Food Colloids*, Blackie Academic and Professional, Glasgow.
- M.J.W. Povey and D.J. McClements (1992) [Editors]. *Developments in Acoustics and Ultrasonics*. Institute of Physics Publishing Ltd, U.K.

### **Articles in Refereed Journals**

- McClements DJ (2006). Non-covalent interactions between proteins and polysaccharides. *Biotechnology Advances*. 24, 621-625.
- \_\_\_\_\_(New Academic Year 2006)
- Thanasukarn P, Pongsawatmanit R, McClements DJ (2006). Impact of fat and water crystallization on the stability of hydrogenated palm oil-in-water emulsions stabilized by a nonionic surfactant. *Journal Of Agricultural And Food Chemistry* 54, 3591-3597.
- Thanasukarn P, Pongsawatmanit R, McClements DJ (2006). Utilization of layer-by-layer interfacial deposition technique to improve freeze-thaw stability of oil-in-water emulsions. *Food Research International*, 39, 721-729.
- Klinkesorn U, Sophanodora P, Chinachoti P, Decker EA, McClements DJ (2006). Characterization of spray-dried tuna oil emulsified in two-layered interfacial membranes prepared using electrostatic layer-by-layer deposition. *Food Research International*, 39, 449-457.
- Baier SK, McClements DJ (2005). Influence of cosolvent systems on the gelation

mechanism of globular protein: Thermodynamic, kinetic, and structural aspects of globular protein gelation. *Comprehensive Reviews In Food Science And Food Safety*, 4, 43-54.

- Mun S, Decker EA, McClements DJ (2006). Effect of molecular weight and degree of deacetylation of chitosan on the formation of oil-in-water emulsions stabilized by surfactant-chitosan membranes, *Journal Of Colloid And Interface Science*, 296, 581-590.
- Wongsasulak S, Yoovidhya T, Bhumiratana S, Bhumiratana S, Hongprabhas P, McClements DJ, Weiss J (2006). Thermo-mechanical properties of egg albumen-cassava starch composite films containing sunflower-oil droplets as influenced by moisture content. *Food Research International*, 39, 277-284
- Wangsakan A, Chinachoti P, McClements DJ (2006). Isothermal titration calorimetry study of the influence of temperature, pH and salt on maltodextrin-anionic surfactant interactions, *Food Hydrocolloids*, 20, 461-467.
- Mun SH, McClements DJ (2006). Influence of interfacial characteristics on Ostwald ripening in hydrocarbon oil-in-water emulsions, *Langmuir*, 22, 1551-1554.
- Keowmaneechai E, McClements DJ (2006). Influence of EDTA and citrate on thermal stability of whey protein stabilized oil-in-water emulsions containing calcium chloride, *Food Research International*, 39, 230-239, 2006
- Gu YS, Corradini MG, McClements DJ, DesRochers J (2006). Properties of low moisture composite materials consisting of oil droplets dispersed in a protein-carbohydrate-glycerol matrix: Effect of continuous phase composition, *Journal of Agricultural & Food Chemistry* 54, 417-424
- Baier SK, McClements DJ (2006). The effect of binary cosolvent systems (glycerol-sucrose mixtures) on the heat-induced gelation mechanism of bovine serum albumin, *International Journal of Food Science & Technology*, 41, 189-199.
- Onsaard E, Vittayanont M, Srigam S, McClements DJ (2006). Comparison of properties of oil-in-water emulsions stabilized by coconut cream proteins with those stabilized by whey protein isolate, *Food Research International*, 39, 78-86.
- Harnsilawat, T., Pongsawatmanit, R. McClements, D.J. (2006). Characterization

- of  $\beta$ -lactoglobulin–sodium alginate interactions in aqueous solutions: A calorimetry, light scattering, electrophoretic mobility and solubility study, *Food Hydrocolloids*, **20**, 577-585.
16. Kim HJ, Decker EA, McClements DJ (2006). Preparation of multiple emulsions based on thermodynamic incompatibility of heat-denatured whey protein and pectin solutions, *Food Hydrocolloids*, **20**, 586-595.
  17. Surh J, Decker EA, McClements DJ (2006). Properties and stability of oil-in-water emulsions stabilized by fish gelatin, *Food Hydrocolloids*, **20**, 596-606.
  18. Surh J, Decker EA, McClements DJ (2006). Influence of pH and pectin type on properties and stability of sodium-caseinate stabilized oil-in-water emulsions, *Food Hydrocolloids*, **20**, 607-618
  19. Guzey D, McClements DJ (2006). Influence of Environmental Stresses on O/W Emulsions Stabilized by  $\beta$ -Lactoglobulin–Pectin and  $\beta$ -Lactoglobulin–Pectin–Chitosan Membranes Produced by the Electrostatic Layer-by-Layer Deposition Technique. *Food Biophysics*, **1**, 30-40.
  20. Mun S, Decker EA, Park Y, Weiss J, McClements DJ (2006). Influence of interfacial composition on in vitro digestibility of emulsified lipids: Potential mechanism for chitosan's ability to inhibit fat digestion. *Food Biophysics*, **1**, 21-30.
  21. Guzey D, McClements DJ (2006). Characterization of beta-lactoglobulin-chitosan interactions in aqueous solutions: A calorimetry, light scattering, electrophoretic mobility and solubility study. *Food Hydrocolloids*, **20**, 124-131.
  22. McClements, D.J. (2005). Theoretical analysis of factors affecting the formation and stability of multilayered colloidal dispersions, *Langmuir*, **21**, 9777-9785.
  23. Klinkesorn U, Sophanodora P, Chinachoti P, McClements DJ, Decker EA (2005). Stability of spray-dried tuna oil emulsions encapsulated with two-layered interfacial membranes, *Journal of Agricultural & Food Chemistry*, **53**, 8365-8371.
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  33. \_\_\_\_ (New Academic Year)
  34. Klinkesorn U, Sophanodora P, Chinachoti P, Decker, E.A. and McClements, 2005. Increasing the oxidative stability of liquid and dried tuna oil-in-water emulsions with electrostatic layer-by-layer deposition technology, *Journal of Agricultural & Food Chemistry*, **53**, 4561-4566
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- stability of oil-in-water emulsions containing droplets stabilized by beta-lactoglobulin-*iota*-carrageenan membranes. *Journal Of Colloid And Interface Science*, **286**, 551-558.
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  39. Kim HJ, Decker EA, McClements DJ, Influence of protein concentration and order of addition on thermal stability of beta-lactoglobulin stabilized n-hexadecane oil-in-water emulsions at neutral pH, *Langmuir*, *21*, 134-139, 2005
  40. McClements, D.J. 2004. Protein-stabilized emulsions. *Current Opinion in Colloid & Interface Science*, *9*, 305-313.
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- oil-in-water emulsions during thermal processing, *Langmuir*, **20**, 9565-9570.
57. Wangsakan A, Chinachoti P, McClements DJ (2004). Effect of surfactant type on surfactant-maltodextrin interactions: Isothermal titration calorimetry, surface tensiometry, and ultrasonic velocimetry study, *Langmuir*, **20**, 3913-3919.
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  103. J.N. Coupland, J Meier and D.J. McClements. (1997). Practical application of ultrasonic particle sizing to food emulsions. in: IFT Annual Meeting: Book of Abstracts. IFT, New Orleans.
  104. K. Demetriades, J. Coupland and D.J. McClements. (1996). Modifying the physicochemical properties of whey protein stabilized emulsions: The effects of pH, ionic strength and temperature. in: IFT Annual Meeting: Book of Abstracts. IFT, New Orleans.
  105. K. Demetriades, J. Coupland and D.J. McClements. (1996). Investigation of emulsion stability using ultrasonic spectroscopy. in: IFT Annual Meeting: Book of Abstracts. IFT, New Orleans.
  106. J.N. Coupland and D.J. McClements. (1996). Determination of droplet size in food emulsions using ultrasonic spectroscopy. in: IFT Annual Meeting: Book of Abstracts. IFT, New Orleans.
  107. J.N. Coupland, J. Weiss and D.J. McClements. (1996). Effect of molecular structure on the release of oil from emulsion droplets into surfactant micelles. in: IFT Annual Meeting: Book of Abstracts. IFT, New Orleans.
  108. J.N. Coupland, H. Wan, Z. Zhu, P. Chinachotti, D.J. McClements and W.W. Nawar. (1996). Oxidation rates of emulsified lipids depend on droplet composition. in: IFT Annual Meeting: Book of Abstracts. IFT, New Orleans.
  109. D.J. McClements (1996). Research in food colloids and ultrasonic techniques. *Abstracts of Papers of the American Chemical Society*, **212**: 117-AGFD Part 1 AUG 25, 1996.
  110. D.J. McClements (1995). Role of micelles in food emulsions. in: IFT Annual Meeting: Book of Abstracts. IFT, California, p.188.
  111. D.J. McClements (1995). Crystallization of droplets in food emulsions. in: IFT Annual Meeting: Book of Abstracts. IFT, California, p.223.
  112. D.J. McClements (1995). Effect of surfactant micelles on the stability of food emulsions. in: ACS 1995 Meeting Book of Abstracts. Chicago.
  113. D.J. McClements and M.K. Keogh (1994). Physical properties of cold-setting gels formed from heat-denatured whey protein isolate. *Irish Journal of Agricultural and Food Research*, **33**, 204.
  114. D.J. McClements (1993). Effects of mass transport on the stability of emulsions. in: IFT Annual Meeting: Book of Abstracts. IFT, Chicago.

#### Articles Published in Popular Press

1. Stephen Daniells (2006). Scientists look to fish gelatin as emulsion stabilizers – article about research carried out in our laboratory. *Food Navigator*.
2. *Food Technology*. (2006). Article describing recent work in our laboratory on whey protein stabilized emulsions.
3. Prepared Foods. (2006). Article describing recent work in our laboratory on multilayer stabilized emulsions.
4. D.J. McClements. Molecules on our plate. *Accents.*, Vol 1, No. 1. pp. 1-2
5. D.J. McClements. What is Jell-O? How does it turn from a liquid to a solid when it cools? *Ask the Experts, Chemistry - Scientific American*.  
<http://www.sciam.com>.

#### Articles Published in Popular Press

1. “Emulsifier Stability: Improving the Odds”, Prepared Foods, 2005.
2. “Algae a la Mode”, UMASS Magazine
3. “Glanbia turns whey into functional,

nutritional emulsifier". Food Navigator & NutraIngredients, 2006.

### ***Thesis***

1. D.J. McClements (1989), "The use of ultrasonics for characterizing fats and emulsions", Ph.D. Thesis, Department of Food Science, University of Leeds.
2. D.J. McClements (1985), "Rheology of sodium caseinate/gelation mixtures", B.Sc. Thesis, Department of Food Science, University of Leeds.

### **Conference Organization Committees**

Continuing Symposium Chair, Colloids in Cosmetics, Pharmaceuticals and Foods, ACS, 2003-2006.

Chair, Scientific Committee "Delivery of Functionality in Complex Food Systems" Amherst, Massachusetts, October, 2007

Chair, Scientific Committee "Food Emulsions: Short Course and Symposium" Amherst, Massachusetts, October, 2005

Member, Scientific Committee "Delivery of Functionality in Complex Food Systems" Lausanne, Switzerland, January 2005.

Member, Scientific Advisory Committee, "World Emulsions Conference", Lyon, France, September 2002.

# Summary of Grants

## Principal Investigator

### Government:

*Utilization of Interfacial Engineering to Improve Emulsion Stability - Renewel.* USDA-National Research Initiative, Competitive Grants Program, \$334,000 (2005-2008).

*Utilization of Interfacial Engineering to Improve Emulsion Stability.* USDA-National Research Initiative, Competitive Grants Program, \$174,000 (2002-2005).

*Nondestructive Characterization of Food Emulsions using Ultrasound (Renewel).* USDA - National Research National Research Initiative, Competitive Grants Program, \$125,000 (1997-2000).

*Influence of Cosolvents on Protein Functionality in Food Emulsions and Gels.* United States Department of Agriculture, Cooperative State Research, Extension, Education Service, Hatch Grant, \$95,000 (2002-2007).

*Commerilization of Ultrasonic Device for Measuring the Fat Content of Mackerel.* U.S. Department of Commerce, National Marine Fisheries Service, Saltonstall-Kennedy Program, \$67,038 (1997-1998).

*Influence of Processing Conditions on The Physicochemical Properties of Protein Stabilized Emulsions.* United States Department of Agriculture, Cooperative State Research, Extension, Education Service, Hatch Grant, \$95,000 (1994-2001).

*Development of Rapid Nondestructive*

*Device for Measuring the Fat Content of Mackerel.* U.S. Department of Commerce, National Marine Fisheries Service, Saltonstall-Kennedy Program, \$54,000 (1995-1997).

*Nondestructive Characterization of Food Emulsions using Ultrasound.* USDA-National Research Initiative, Competitive Grants Program, \$110,000 (1996-1997).

### Industrial:

*Improvement of Bakeable Emulsion Properties.* Kraft Foods, \$92,000 (2004).

*Enhancing Beverage Emulsion Stability.* Wild Flavors, Germany, \$60,000 (2000).

*Stabilization of Beverages.* Pepsi Cola Company, Valhalla, New York, \$20,000 (1998).

*Application of Whey Proteins as Emulsifiers in Foods.* Dairy Management Inc., \$68,033 (1998-2001).

*Cost Effective Method of Increasing the Utilization of Whey Protein Ingredients.* Dairy Management Inc., \$68,033 (1997-2000).

*Research in Food Emulsions.* Procter and Gamble, Ohio, \$25,000 (1996).

*Stabilization of Food Emulsions.* Nestle Research and Development Center, Inc., Connecticut, \$30,000 (1994).

### University:

*Efficacy of Producing Stable  $\omega$ -3 Fatty Acid-Enhanced Foods to Improve Human Health.* E.A. Decker. USDA-IFAFS. \$1,722,000.

(2001-2005)

*Impact of emulsifiers on oxidation in lipid dispersions.* Eric Decker (PI), D.J. McClements (Co-PI). National Research Initiative Competitive Grants Program. United States Department of Agriculture, \$140,000 (1999-2002).

*Improvement of Oxidative Stability of Encapsulated Fish Oil in Food Powders.* P. Chinachoti (PI), D.J. McClements, E.A. Decker, W. Nawar (co-PIs). U.S. Department of Commerce, National Marine Fisheries Service, Saltonstall-Kennedy Program, Department of Commerce., \$92,073 (2000-2002).

*Seafood safety.* Levin, R. (PI). F. Clydesdale, E. Decker, H. Hultin, R. Labbee, L. D.J. McClements. McLandsborough, & K. Shetty (Co-PIs). USDA. \$668,000 (2002-2005).

#### Industrial:

*Stabilization of color in beverages.* Eric Decker (PI). D.J. McClements & F. Clydesdale (Co-PIs). Pepsi-Cola Company, Valhalla, New York. \$40,000 (2003).

*Control of flavor oxidation in emulsions.* E.A. Decker (PI). D.J. McClements (Co-PI). Kraft Foods. \$40,000 (2003).

*Stabilization of Spray-Dried Dairy-Based Creamers.* P. Chinachoti (PI), D.J. McClements, E.A. Decker, W. Nawar (co-PIs). Dairy Management Inc., \$120,000 (1996-1999).

#### University:

*Weiss, J. (PI), McClements, D.J., Decker E.A. and Park, Y.* Food-Based Solutions to Health and Wellness Proposal for Academic-Industry Strategic Alliance. University of Massachusetts Science and

Technology Initiatives Fund.  
\$100,000, 2005-2007.

**Total Funds as Co-Investigator:  
\$3,660,000**

***Total Grant Funds: \$4,558,000***

# Summary of Service Activities

## **Invited Presentations**

- D. J. McClements (2005). Utilization of interfacial engineering to create food emulsions with novel and improved properties. Delivery of Functionality in Complex Food Systems Lausanne, Switzerland.
- D. J. McClements (2005). Food emulsions. General Mills, Minneapolis.
- D. J. McClements (2005). Food emulsions. Sensient, Indianapolis.
- D. J. McClements (2005). Whey proteins in emulsions. IFT Annual Meeting 2005, Book of Abstracts, New Orleans.
- D.J. McClements (2004). Calorie Reduction in Food Emulsions. IFT Annual Meeting, Las Vegas, NV.
- D.J. McClements (2004). Incorporation of  $\omega$ -3 Fatty Acids in Emulsions. IFT Annual Meeting, Las Vegas, NV.
- D.J. McClements (2004). Layer-by-Layer deposition for improved functionality. NIZO, Wageningen, The Netherlands.
- D.J. McClements (2004). Production and Characterization of O/W Emulsions Containing Multi-Layered Membranes. *Food Colloids Conference*, Harrogate, UK.
- D.J. McClements (2003). Role of hydrocolloids and emulsifiers in foods. *Food Hydrocolloids Conference*, Wrexham, UK.
- D.J. McClements (2003). Utilization of interfacial engineering to improve emulsion properties. Strategic Alliance Meeting, University of Massachusetts, Amherst, MA.
- D.J. McClements (2002). Optical properties of food emulsions. World Emulsion Conference, Lyon, France.
- D.J. McClements (2002). Recent progress in food emulsions. INRA, Nantes, France.
- D.J. McClements (2001). Influence of neutral cosolvents on protein functionality. International Food Hydrocolloids Conference, Raleigh, USA.
- D.J. McClements (2000). Ultrasonic characterization of proteins, Brunner Symposium, University of Michigan.
- D.J. McClements (1999). Emulsions as Model Systems for "Soft-Solids", University of Guelph, Ontario, Canada.
- D.J. McClements (1999). Appearance, Stability and Texture of Protein Stabilized Emulsions. Monsanto, Chicago, IL.
- D.J. McClements (1999). Emulsions, Colloids and Microencapsulation. International Foods, Baltimore, MD.
- D.J. McClements (1999). How the Prooxidant Activity of Iron and the Antioxidant Activity of Phenolics is Influence by Emulsion Droplet Characteristics. Cultor Foods, White Plains, NY.
- D.J. McClements (1999). Improving the Stability of Beverage Products using Colloid Chemistry. PepsiCo, Valhalla, NY.
- D.J. McClements (1998). Molecular-Colloidal Basis of Food Properties. Strategic Alliance Meeting, University of Massachusetts, Amherst, MA.
- D.J. McClements (1998). Ultrasonic Applications in Foods, University of Guelph, Ontario, Canada.
- D.J. McClements (1997). Ultrasonic Characterization of Emulsions and Suspensions. Halliburton Energy Services, Houston, TX
- D.J. McClements (1997). Food Biopolymers and Colloids. Best Foods, Summerset, CT.
- D.J. McClements (1997). Developments in Food Colloids. Strategic Alliance Meeting, University of Massachusetts, Amherst, MA.
- D.J. McClements (1995). Advances in Food Emulsions. Nestle Research and Development, New Milford, CT
- D.J. McClements (1995). Enhanced Utilization of Fish. Gloucester Fisheries Forum, Gloucester, MA.
- D.J. McClements (1995). Ultrasonics in the Food Industry. Opta Food Ingredients, Bedford, MA.

- D.J. McClements (1994). Enhancing the Physicochemical Properties of Emulsions. Nabisco Foods Group, East Hanover NJ.
- D.J. McClements (1994). Improving the Stability of Food Emulsions. Nabisco Foods Group, East Hanover NJ.
- D.J. McClements (1993). Applications of Ultrasound to Foods. Kraft General Foods, Chicago, IL.
- D.J. McClements (1990). Ultrasonic Determination of Solid Fat Content in Foods. Unilever Research, Sharnbrook, Bedford.

### **Editorial Boards of Journals**

Food Biophysics  
 Food Hydrocolloids  
 Journal of Dairy Science

### **Professional Service**

- Organizer, *Food Emulsions: Short Course and Symposium*, UMASS, Amherst, 2005.
- Scientific Advisory Board, *Delivery of Functionality in Complex Food Systems*, Laussene, Switzerland, 2005.
- Co-organizer and Co-Chair, *Calorie Reduction in Foods*. IFT Annual Meeting, Las Vegas, 2004.
- Scientific Advisory Board, *World Emulsion Congress*, Lyon, France, 2001.
- Organizer and Chair, *Physicochemical Properties of Food Emulsions*. IFT Annual Meeting, Chicago, 1999.
- Co-organizer of *Developments in Acoustics and Ultrasonics* Conference,

Institute of Physics, University of Leeds, 1991.

Reviewed articles for:

*Colloids and Surfaces A*  
*Colloids and Surfaces B*  
*Food Hydrocolloids*  
*IEEE Trans. Ultrasonics, Ferroelectrics and Frequency Control*  
*International Dairy Journal*  
*Journal de Physique*  
*Journal of the Acoustical Society of America*  
*Journal of Agriculture and Food Chemistry*  
*Journal of Colloid and Interface Science*  
*Journal of Dairy Science*  
*Journal of European Physics*  
*Journal of Food Engineering*  
*Journal of Food Science*  
*Journal of Physical Chemistry*  
*Journal of Rheology*  
*Langmuir*  
*Physics of Fluids*  
*Rheologica Acta*  
*Ultrasonics*

# Summary of Teaching and Mentoring Activities

Spring 2004: 4.53/5.00 (91%)

Spring 2005: 4.33/5.00 (87%)

## *Physical Phenomena in Foods*

Fall 1996: 4.37/5.00 (87.4%)

Fall 1998: 4.29/5.00 (85.7%)

Spring 2000: 4.34/5.00 (86.8%)

Spring 2002: 4.38/5.00 (87.5%)

Fall 2003: 4.67/5.00 (93.4%)

## **Classroom Teaching**

*Analysis of Food Products* (FD SCI 581: 4 Credits). Physical, chemical, microbiological and microscopic methods of examining food products. With laboratory. 1995-present.

*Graduate Seminar* (FD SCI 797: 1 Credit). Readings, reports and discussions on current literature in area of food. 1994-present.

*Physical Phenomena in Foods* (FD SCI 761: 3 Credits). Physical and functional properties of foods: origin and modification of surface forces; electrophysical phenomena; colloidal aggregates and dispersions; stability of emulsions and foams; adsorption phenomena; properties of food polymers in solution; interfacial charge effects; structure and formation of gels. Fall 1995 - present.

*Food Colloids* (FD SCI 797B: 2 Credits). Readings, reports and discussions on current literature and research in the area of food colloids. Spring/Fall 1996- present.

## **Student Evaluations of Teaching**

### *Analysis of Food Products*

Spring 1995: 5.28/7.00 (75%)

Spring 1996: 4.07/5.00 (81%)

Spring 1997: 4.31/5.00 (86%)

Spring 1998: 4.30/5.00 (86%)

Spring 1999: 4.53/5.00 (91%)

Spring 2000: 4.71/5.00 (94%)

Spring 2001: 4.70/5.00 (94%)

Spring 2002: 4.60/5.00 (92%)

Spring 2003: 4.56/5.00 (91%)

## **Teaching Grants**

CFNR Mini-grant proposal.

"Spectrophotometers for Food Science Labs", \$1,900. E. Decker, R.E. Levin, L. Mclandsborough, D.J. McClements, P. Chinachoti. 2001.

CFNR Mini-grant proposal. "Ion Selective Electrode for Food Science Labs", \$1,000. E. Decker, D.J. McClements, 1999.

## **Graduate Advising**

### Major Advisor

#### **Ph.D**

S. Baier. Influence of cosolvents on biopolymer functionality.

T. Basaran. Ultrasonic imaging of food emulsions and gels.

C. Bryant. Cold-set whey protein gelation: Physicochemical and molecular studies.

R. Chanamai. Nondestructive evaluation of food emulsions using ultrasonic spectrometry.

W. Chantrapornchai. Optical properties of food colloids.

W. Chanasattru. Influence of high concentrations of cosolvents on globular protein functionality.

K. Demetriades. Influence of ingredient interactions on food emulsion properties.

D. Guzey. Utilization of interfacial engineering to improve emulsion properties.

E. Keomanachai. Influence of protein-mineral interactions on nutritional emulsion properties.

Masubon Thongngam. Characterization of interactions between polar lipids and dietary fibers.

Apiradee Wangsakaran. Characterization of interactions between polar lipids and maltodextrin.

J. Weiss. Influence of mass transport processes on properties of oil-in-water emulsions.

*Masters*

C. Canciallare. Influence of processing on the properties of nutritional emulsions

D. Kelley. Protein-surfactant interactions and their influence on ingredient functionality.

*Graduate Student Committees*

I have also served on the committee or joint supervised many other Ph.D. and M.S. students. This has included supervising more than 5 Ph.D. students from Thailand in my laboratory for 12 – 18 months each.

***Other Mentorship Activities***

Post Doc. Research Associates 9

Visiting Scientists 12