

Curriculum Vitae

Andrew J. Gravelle, M.Sc.

Research Assistant
Department of Food Science
University of Guelph
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Education

Master of Science, Biophysics <i>University of Guelph, Guelph, ON</i>	2008 – 2010
Honors Bachelor of Science, Biophysics <i>University of Guelph, Guelph, ON</i>	2003 – 2008

Graduate Teaching Assistantships

Introductory Physics <i>University of Guelph, Guelph, ON</i>	Fall of 2008 – 2010
Biophysics of Excitable Cells <i>University of Guelph, Guelph, ON</i>	Winter of 2008, 2009

Academic Awards

College of Physical and Engineering Dean's Scholarship – \$4,000 <i>University of Guelph, Guelph, ON</i>	2009
College of Physical and Engineering Dean's Scholarship – \$1,000 <i>University of Guelph, Guelph, ON</i>	2008
Ontario Graduate Scholarship - \$15,000	2008

Professional Societies

American Oil Chemists' Society	2012 – Present
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Significant Academic Contributions

Refereed Publications

Wang, F.C., Gravelle, A.J., Blake, A.I., Marangoni, A.G. Novel *trans* fat replacement strategies. (2016) *Current Opinion in Food Science*, 7, 27-34.

Gravelle, A.J., Davidovich-Pinhas, M., Zetzl, A.K., Barbut, S., Marangoni, A.G. Influence of solvent quality on the mechanical strength of ethylcellulose oleogels. (2016) *Carbohydrate Polymers*, 135, 169-179.

Gravelle, A.J., Marangoni, A.G., Barbut, S. Influence of particle size and interfacial interactions on the physical and mechanical properties of particle-filled myofibrillar protein gels. (2015) *RSC Advances*, 5, 60723-60735.

Davidovich-Pinhas, M., Gravelle, A.J., Barbut, S., Marangoni, A.G. Temperature effects on the gelation of ethylcellulose oleogels. (2015) *Food Hydrocolloids*, 46, 76-83.

Zetzl, A.K., Gravelle, A.J., Kurylowicz, M., Dutcher, J., Barbut, S., Marangoni A.G. Microstructure of ethylcellulose oleogels and its relationship to mechanical properties. (2014) *Food Structure*, 2(1-2), 27-40.

Gravelle, A.J., Barbut, S., Quinton, M., Marangoni, A.G. Towards the development of a predictive model of the formulation-dependent mechanical behaviour of edible oil –based ethylcellulose oleogels. (2014) *Journal of Food Engineering*, 143, 114-122.

Gravelle, A. J., Barbut, S., & Marangoni, A. G. Fractionation of ethylcellulose oleogels during setting. (2013) *Food & Function*, 4(1), 153–161.

Gravelle, A. J., Barbut, S., & Marangoni, A. G. Ethylcellulose oleogels: Manufacturing considerations and effects of oil oxidation. (2012) *Food Research International*, 48(2), 578–583.

Janik, R., Ritz, E., Gravelle, A., Shi, L., Peng, X., Ladizhansky, V. Interresidue carbonyl-carbonyl polarization transfer experiments in uniformly ^{13}C , ^{15}N -labeled peptides and proteins. (2010) *Journal of Magnetic Resonance*, 203(1), 177–184.

Conference Presentations (Oral)

Davidovich-Pinhas, M., Gravelle, A.J., Barbut, S., Marangoni, A.G. New insight into the gelation mechanism of ethylcellulose/canola oil oleogels. 6th International Symposium on the Delivery of Functionality in Complex Food Systems. Paris, France, July 14–17, 2015.

Gravelle, A.J., Davidovich-Pinhas, M., Nicholson, R., Barbut, S., Marangoni, A.G. New strategies for tailoring the mechanical properties of ethylcellulose oleogels for food applications. 7th International Symposium on Food Structure and Rheology. ETH, Zurich, Switzerland, June 7–11, 2015.

Gravelle, A.J., Davidovich-Pinhas, M., Barbut, S., Marangoni, A.G. New approaches for the enhancement of ethylcellulose oleogels for fat replacement. 106th Annual Meeting of the American Oil Chemists' Society. Orlando, FL, U.S.A., May 3–6, 2015.

Gravelle, A.J., Barbut, S., Marangoni, A.G. Towards elucidating the role of lipid-protein interactions on the textural properties of comminuted meat products. 105th Annual Meeting of the American Oil Chemists' Society. San Antonio, TX, U.S.A., May 4–7, 2014.

Gravelle, A.J., Barbut, S., Marangoni, A.G. Formation of vegetable oil-based ethylcellulose oleogels at the macro- and micro-scale. 104th Annual Meeting of the American Oil Chemists' Society. Montréal, QC, Canada, April 28–May 1, 2013.

Gravelle, A.J., Quinton, M., Barbut, S., Marangoni, A.G. Engineering ethylcellulose oleogel mechanical properties through compositional modifications. 245th National Meeting of the American Chemical Society. New Orleans, U.S.A., April 7–11, 2013.

Gravelle, A.J., Barbut, S., Marangoni, A.G. Development of a response surface to tailor the mechanical properties of edible oil organogels for a diverse range of applications in food systems. 103rd Annual Meeting of the American Oil Chemists' Society. Long Beach, CA, U.S.A., April 29–May 2, 2012.

Gravelle, A.J., Barbut, S., Marangoni, A.G. Effects of oxidation on the physical and mechanical properties of ethylcellulose oleogels. 6th International Symposium on Food Structure and Rheology. ETH, Zurich, Switzerland, April 10–13, 2012.

Poster Presentations

Barbut, S., Gravelle, A.J., Marangoni, A.G. Composite Gels – Effect of inert particles on the texture of comminuted meat batters. 61st International Congress on Meat Science and Technology. Clermont-Ferrand, France, August 23–28, 2015.

Gravelle, A.J., Marangoni, A.G., Barbut, S. Particle filled myofibrillar protein gels: Investigating the role of particle size and protein/filler interactions. 7th International Symposium on Food Structure and Rheology. ETH, Zurich, Switzerland, June 7–11, 2015.

Gravelle, A.J., Barbut, S., Marangoni, A.G. Effects of oxidation on the mechanical properties of canola oil-based ethylcellulose oleogels. 103rd Annual Meeting of the American Oil Chemists' Society. Long Beach, CA, U.S.A., April 29–May 2, 2012.

Gravelle, A.J., Barbut, S., Marangoni, A.G. Characterization of the mechanical properties of edible oil organogels for applications in food systems. 4th International Symposium on the Delivery of Functionality in Complex Food Systems. Guelph, ON, Canada, August 21–24 2011.

Gravelle, A.J., Peng, X., Ladizhansky, V. Characterization of Rotameric Motions in Microcrystalline Proteins Using Rotational Resonance Solid State NMR Spectroscopy. Guelph-Waterloo Physics Institute Annual Graduate Poster Session. Guelph, ON, Canada, July 2010.

Gravelle, A.J., Peng, X., Ladizhansky, V. Characterization of Rotameric Motions in Amino Acid Side Chains Using Rotational Resonance Solid State NMR Spectroscopy. Guelph-Waterloo Physics Institute Annual Graduate Poster Session. Guelph, ON, Canada, July 2009.

Significant Research Experience

Research Associate under Dr. Alejandro Marangoni & Dr. Shai Barbut
Department of Food Science, *University of Guelph*

Feb. 2011 – Present

- Characterizing the mechanical properties of gelled edible oils (canola, soybean, etc.) for use as fat substitutes in a variety of food systems
- Developing protocols for improving the quality and consistency of gelled oils and improving upon existing testing methodologies
- Involved in the implementation of gelled oils as a substitute for animal fat in comminuted meat products
- Characterizing the physical characteristics of composite gels through the use of model meat systems with alternative filler particles
- Utilizing theoretical models to describe mechanical properties of particle-filled gel networks

M.Sc. Student under Dr. Vladimir Lalizhansky

Sept. 2008 – Dec. 2010

Protein NMR Group, *University of Guelph*

Thesis: *Characterization of Side Chain Dynamics in a Microcrystalline Protein by Solid State Nuclear Magnetic Resonance (NMR) Spectroscopy*

- Synthesized, purified, and crystallized isotopically labeled proteins expressed in *E. coli*
- Performed Magic Angle Spinning Solid State NMR experiments on protein samples
- Developed and implemented theoretical simulations to fit experimental NMR data

Research Assistant under Dr. Vladimir Lalizhansky

May 2008 – Sept. 2008

Protein NMR Group, *University of Guelph*

- Performed NMR experiments and complementary theoretical simulations on model peptides and proteins
- Purified and crystallized protein samples for future NMR experiments

Undergraduate research project under Dr. John Dutcher

Jan. 2008 – April 2008

Polymer and Surface Interface Group, *University of Guelph*

- Used Digital Inline Holographic Microscopy (DIHM) to visualize the self-assembly of polystyrene microspheres in three spatial dimensions
- Developed a protocol for visualizing the self-assembly process using DIHM
- Investigated particle density threshold of DIHM

Extracurricular Activities

Rock climbing (sport climbing / bouldering)

Mountain biking

Hiking / backpacking