GILLES K. KOUASSI, Ph.D.

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EXPERTISE:

- Characterization of the physical state of food materials using differential scanning calorimetry (DSC), dielectric analyzer (DEA), solid state NMR, x-Ray diffraction, dynamic light scattering and rheological, spectroscopic, microscopic, and imaging techniques (AFM, TEM, FLowCam Imaging).
- Control of emulsion stability using carbohydrate ingredients/modified starches
- Stability of emulsions and low moisture food systems
- Carbohydrate-proteins interactions in food systems
- Novel delivery methods of functional ingredients and drugs
- Nano-Microencapsulation
- Water management and phase transitions in enzyme-embedded carbohydrate foods and food systems
- Non-thermal dairy processing
- Physical characterization of biomaterials: state transitions in amorphous food systems
- Extraction of phenolic compounds from agricultural products and functional activitiy assessment
- Molecular mobility in amorphous food systems/ solid state NMR
- Coating and surface functionalization
- Food product development
- Development and validation of analytical methods
- Analysis of food components by HPLC, LC-MS, GC-MS, and spectroscopic methods (Dynamic Light Scattering, FTIR, Circular Dichroism, Micro-array imaging)
- Quality Control and Management

EDUCATION

January 2003. Ph.D. Food Chemistry, Department of Applied Chemistry & Microbiology & Department of Food Technology, Faculty of Agriculture and Forestry, University of Helsinki, Finland
Major: **Food Physical Chemistry**
Minors: **Polymer Science**
Dissertation title***:*** "State transitions and enzymatic activity in low-moisture carbohydrate food systems"
Advisor**:** Professor Yrjö Roos [Biomaterials Research Group]

May 2002. International Business Acumen (IBA) from the Helsinki Business Polytechnic, Finland
Thesis**: "**Marketing Strategy for an Emerging Economy": case of the Czech Republic

April 1998. **M.S. in Food Chemistry** from the Division of Food Chemistry, Department of Applied Chemistry and Microbiology, University of Helsinki, Finland.
Major**: Food Chemistry (Food Analysis)**
Minors**:** Analytical Chemistry-Organic Chemistry (integrated)
Thesis*:* **"**Phenolic contents in relation to antioxidant activity of berry and fruit products"

September 1997. BS in Food Chemistry, Division of Food Chemistry, University of Helsinki, Finland.
Thesis*:* "Factors affecting enzyme activity during enzymatic starch hydrolysis"

RESEARCH & PROFESSIONAL EXPERIENCE

- **October 2014-Present: President and Founder of Chem & Tech. Consulting LLC**. Chem & Tech. Consulting LLC aims at providing consulting services to the food, chemical, and pharmaceutical industries. We specialize on ingredients and biomaterials stability, functionality assessment, food safety, physical characterization, chemical analysis, and quality control/management.

- **August 2007- May 2014: Chair of Food Physical Chemistry/ Nanotechnology Research group,** Department of Chemistry, Western Illinois University,

    - **August 2012-May 2014:** Associate Professor of Physical Chemistry
    - **August 2007-August 2012:** Assistant Professor of Physical Chemistry,

I led several research projects on biopolymer functionality, emulsion stability, new delivery methods for functional ingredients and drugs, and natural product chemistry using nanotechnology-based tools. A few of those projects are listed below.

- Development of new delivery methods for functional ingredients, including linolenic acid, eicosapentaenoic acid, flavonoids, and drugs.
- Investigation of *kappa*-, *iota*-, *lambda*-carrageenan, maltodextrins, cyclodextrin, guar gum, sodium alginate, and chitosan interactions with whey protein for micro-nanoencapsulation of essential ingredients (drugs, oil-in-water, flavors, vitamins and nutraceuticals).
- Water management for stability and shelf-life improvement using sorption isotherms and state diagrams
- Particles characterization by atomic force microscopy (AFM) transmission election microscopy (TEM), dynamic light scattering (DLS), and FlowCam imaging.
- Research Collaboration with the Company FlowCam Imaging Technology on particles imaging.
- Study of the dynamism of oil-in water emulsions (Oswald ripening and syneresis)
- Analysis of drugs and bioactive compounds in berry and fruit products using LC-MS.
- Solid state NMR characterization of biomolecular mobility in low-moisture food systems
- Development of methods for detection of prion protein in cow
- Development of low-moisture sugar/biopolymers/protein systems and characterization using thermal, rheological, and spectroscopy techniques including, Differential

scanning calorimetry (DSC), Dynamical Thermal Analysis, (DMTA) Dynamic Light Scattering (DLS), NMR, and circular dichroism spectroscopy
- Analysis of drugs and bioactive compounds in berry and fruit products using MALDI-TOFF LC-MS.

- **July 2006-July 2007**: **Department of Food Science, The Pennsylvania State University, PA**

  Postdoctoral Research Scientist - Research coordinator
  High Pressure Processing (HPP) Project

- Coordination of research on milk pasteurization and inactivation of spoilage enzymes and microorganisms affecting food quality
- Development of high pressure-pasteurized fruit products for an american food company
- Kinetics modeling for inactivation of milk enzymes by HPP
- Development of analytical methods for assessing changes in enzyme's structure using circular dichroism (CD) spectroscopy, dynamic light scattering (DLS) and gel electrophoresis
- Directing research projects for fruit product development and quality assessment using spectroscopic techniques and texture analyzer. The project was a source of value-added to the Sunkist Company and helped saving hundreds of thousands of dollars.

- **March 2004-June 2006: Division of Food Engineering, Department of Agricultural and Biological Engineering, The Pennsylvania State University**

  Postdoctoral Research Scientist and supervisor
  Nanotechnology projects

- Pioneer of nanotechnology research for developing a biosensor platform for monitoring pathogens and for investigating biomolecule interactions for health and food safety assessment.
- Development of nanotechnology–based assembly for detection.
- Development of methods for characterization of biomolecules using AFM, FTIR, TEM, fluorescence microscopy, and a microarray scanner.
- Supervision of graduate research scientists.

- **February 1998-January 2003: Department of Food Technology, University of Helsinki, Finland**

  Research Scientist **- Postgraduate Researcher**

- Investigation of the effects of state and phase transitions on rates of enzymatic reactions in low-moisture carbohydrate food systems including, enzyme-embedded amorphous carbohydrate-sugar and gelatin-sugar food systems, using DSC and DEA.
- Investigation of the effects of changes in the physical state and water activity on enzyme-embedded in complex carbohydrate-protein food systems

- Analysis of changes in sugar concentration in carbohydrate food systems, and investigation of the effects of biopolymers, glycerol, and water on their physical state using HPLC.
- Investigation of the effects of state and phase transitions on release /retention of flavor compounds in biopolymer-sugar matrices using GC-MS and electronic nose

- **December 1999-July 2000**: **Department of Food Science, Sutton Bonington Campus, Faculty of Agricultural Sciences, University of Nottingham, England.**

  Visiting Research Scientist
  Sugar Link Project (High Sugar Polysaccharides Food Link)

- Investigator of the *Sugar-Link* project: I developed high-sugar polysaccharide food systems for major food companies in England, in collaboration with the University of Nottingham.
- Development of methods for assessment of sugar crystallization in low-moisture food systems using solid state NMR.

- **September 1996-December 1997**: **Division of Food Chemistry of the University of Helsinki, Finland**

  Graduate Research Assistant
  M.S. Food Chemistry Research: Fruit and berry wines and juices (project)
- Development of method for detection of flavonoids and polyphenols in crowberry/blackcurrant, and apple juices and wines using HPLC, and study of their antioxidant activity using methyl linoleate as a lipid model. The method was broadly implemented by several laboratories in the EU framework for qualitative analysis of phenolic compounds.

- **May–August 1996: Department of Chemistry, the National Veterinary and Food Research institute (EELA), Finland.**

  Research Internship

  - I developed two methods for detection of chemical residues (beta-agonists) in cow meat and hairs using GC-MS. The methods were adopted in the EU framework for detection of growth promoters adrenergic in 1996.

- **September 1994-November 1996**: Division of Food Chemistry, University of Helsinki

  Undergraduate research fellow

  B.S. Food Chemistry research: (Starch Hydrolysis project)
  - I Investigated factors affecting starch hydrolytic enzymes during starch liquefaction **in industrial settings**

SELECTED PEER-REVIEW PUBLICATIONS

1. **Kouassi, K.G**., Gogineni, V, Boley, S. M. Microencapsulation of vitamins K into a dual polysaccharide matrix. Effects of pH, ionic strength, glass transition, and water activity on controlled release. *Submitted*.

2. **Kouassi K. G,** Gowda N.M., Boley, S. M., et al. 2013. Nano/microencapsulation of functional ingredients and drugs into biopolymers matrices: a study of stability and controlled release. *In ACS symposium series: Advanced in Applied Nanotechnology for Agriculture*. Chapter 13, pp. 221–234.

3. **Kouassi K. G**. Teriveedhi, V., Milby, C., Tarab, A., Boley, S. M., et al. 2012. Nano/Micro-encapsulation of of linoleic acid in biopolymer matrices: effects of the physical state, water, and quercetin on oxidative and thermal stability. *J. Encapsul. Absorp. Sci.* 2. 1-10.

4. Kolachana, V.S.K. Cholkar, K, Kayani, W., M., **Kouassi, K. G**., Gowda, N. M. 2012, Oxidative conversion of lactic acid by chloramine-T in sulfuric acid medium: a kinetic and mechanistic study. *Am. J. Chem*. 2, 18-24.

5. Poloju, S., Cholkar, K, **Kouassi, K.G.** Made Gowda, N. et al. 2012. Oxidation of Lactic Acid by Manganese (III) in Sulfuric Acid Medium: Kinetics and mechanism. *Am. J. Chem*. 2012, 2(3): 58-62.

6. Naini, Y.R., Ahmad, T., **Kouassi, K.G.** Ananda, S. Netkal M. Made Gowda, 2012. Synthesis and Characterization of transition metal complexes of chlorpromazine. *Am. J. Chem*. 2012; 2(4): 181-185.

7. Cholkar, K., **Kouassi, K. G**., Puttaswamy, C, K.S. Rangappa, K.S., Made Gowda, N. 2012. Ruthenium (III) catalyzed oxidation of indigo carmine by manganese (III) in sulfuric acid medium: a kinetic and mechanistic study". *Oxi. Commun*.

8. Cholkar K., **Kouassi, K. G**., Ananda, S. et al. 2011. Osmium (VIII)-catalyzed kinetics and mechanism of indigo Carmine by Chloramine –B and basic medium. *Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-metal Chemistry*. 41, (9), 1126,-1134.

9. **Kouassi, K. G**. 2011. Magnetic and gold-coated magnetic nanoparticles as tools for biodetection: preparation, characterization, and biosensing applications. *Current Nanoscience.7, 4, 510-523.*

10. Hayman, M. M., **Kouassi K. G**. et al. 2008. Effect of water activity on the activity of Lactase dehydrogenase and growth of Listeria monocytogenes upon high pressure treatments. *Int .J. Food Microbiol*. 124, (1) 21-26.

11. **Kouassi, K. G**., Wang, P., et al. 2007. Aptamer-mediated magnetic and gold coated magnetic nanoparticles as detection assay for prion protein assessment. *Biotechnol. Prog.* 23, 1239-1244.

12. **Kouassi, K. G**, Anantheswaran S. et al. D. J. 2007. Investigating the effects of high pressure processing on activity and structural changes of alkaline phosphatase and L-lactate dehydrogenase in milk and buffers. J. *Agric. Food Chem.55, 9520-9529***.**

13. **Kouassi, K.G.** Irudayaraj J. 2006. Magnetic and gold coated magnetic nanoparticles as a DNA sensor. *Anal. Chem*. 78, 3234-3241. [Designated # 1 Most Accessed Article by readers of Analytical Chemistry, a journal of the American Chemical Society (ACS) in 2006].

14. **Kouassi, K. G**. Irudayaraj, J. 2006. A nanoparticles-based immobilization assay for prion kinetics study. *J. Nanobiotechnol.* 2006, 4:8.**Kouassi, K. G**., Irudayaraj, J., McArty, G. 2005. Activity of glucose oxidase functionalized onto magnetic nanoparticles. *Biomag. Res. and Tech.* 3/1/1. [Ranked # 4 Most Accessed Article in Biomagnetic Research and Technology in 2005].

15. **Kouassi, K. G**., Irudayaraj, J. MacArty, G. 2005. Activity of cholesterol oxidase bound to magnetic nanoparticles .*J. Nanobiotech*.3:1 http://www.jnanobiotechnology.com/content 3:1.1.

16. **Kouassi, K. G**., Irudayaraj, J. MacArty, G. 2005. Activity of cholesterol oxidase bound to magnetic nanoparticles .*J. Nanobiotech*.3:1 http://www.jnanobiotechnology.com/content 3:1.1.

17. **Kouassi, K.G.** and Roos, Y. 2002. Glass transition, water, and glycerol effects on Sucrose inversion in pullulan–sucrose systems. *J. Food Sci*. 67, 3402-3407.

18. **Kouassi, K.G**., Jouppila, K., Roos H. Y. Effects of κ-carrageenan on crystallization and in lactose-sucrose food systems. Proceedings of the *Nordic Rheology Conference*. Nordic Rheology Society. June 2002, Gothenburg, Sweden, June 2002.

19. **Kouassi, K**. and Roos, Y. 2001. Glass transition and water effects on sucrose Inversion in noncrystalline carbohydrate food systems. *Food Res. Int*. 34, 895-901.

20. **Kouassi, K**. and Roos, Y. 2001. Glass transition and water effects on sucrose Inversion in noncrystalline carbohydrate food systems. *Food Res. Int*. 34, 895-901

21. **Kouassi, K** and Roos, Y. 2000. Glass transition and water effects on sucrose inversion by invertase in lactose-sucrose system. *J. Agric. Food Chem*. 48, 2461-2466.

Manuscripts in preparation

- A study of kinetics of lactose crystallization by solid state CPMAS/ NMR and gravimetric water sorption isotherm.

- Mapping the phenolic composition of Ivorian cocoa according to regional fermentation practices.

CONFERENCE PRESENTATIONS AND ABSTRACTS

1. **Kouassi K.G.** The future of food science: Vision for the Center of food Science and Technology. University of Maryland at Eastern Shore, May 2014.
2. **Kouassi K.G.** Effects of bioactive biopolymers on emulsion stability. Washington State University, Pullman. February 2014.
3. **Kouassi K. G**. Investigating the stabilizing effects of biopolymers against syneresis in food emulsion systems containing bioactive ingredients. IFT annual meeting, Chicago, Illinois, July 2013.
4. **Kouassi K.G.** Improving stability, delivery and functional attributes of food systems using biopolymers**.** Kansas State University, Department of Grain Science & Industry. May 2013. Manhattan, Kansas.
5. **Kouassi K.G.** Starch modification in product developments. Kansas State University, Department of Grain Science & Industry. May 2013. Manhattan, Kansas
6. **Kouassi K. G.** "Nano/microencapsulation of functional ingredients and drugs into biopolymer matrices: Study of stability and controlled released. ACS Annual Meeting, San Diego, California, April 2012.
7. **Kouassi K. G.** Reddy D. Phenolic composition and functional activity of berry extracts, ACS annual meeting, San Diego, California, April, 2012.
8. Reddy D., **Kouassi K. G.** Effects of fermentation on changes in polyphenols and antioxidant activity of berries and berry products. October 2012, CSUI annual conference, Argonne National Laboratory, Argonne, Illinois, October 2012,
9. Shashank, A., **Kouassi K. G**., Effects of Turbidity and Viscosity on Syneresis in biopolymers stabilized emulsions**.** CSUI annual conference, Argonne National Laboratory, Argonne, October 2012.
10. Chodavarapu, P., and **Kouassi, K**. G. Stability, plasticizing effects and antioxidant effects of sucralose /trehalose containing whey protein and omega fatty acids**.** CSUI Annual conference, Argonne National Laboratory, Argonne, October 2012.
11. Gogineni, Varalakshmi L., Boley, Mark M., Made Gowda, Netkal. M., and **Kouassi, K.G.** Nano/microencapsulation of piroxicam into dual biopolymer matrices: effect of pH, ionic strength, temperature, and water activity of encapsulation and release. Macomb, Illinois. ISAS annual conference, Galesburg, April 2012.
12. Shashank, A., Gowda, N.M., Boley, M., Ahmad. T. and **Kouassi, K G.** Investigation of syneresis and phase separation in emulsions and amorphous systems. ISAS annual conference, Galesburg, April 2012.
13. Tournear, J., Gogineni, V. and **Kouassi, K G**. A study of the stability of biopolymer-reinforced emulsion systems containing lipophilic bioactive ingredients. ISAS annual conference, Galesburg, April 2012.
14. Chodavarapu, N. P., Boley, M. Tarab, A. and **Kouassi, K. G**. Effect of trehalose and sucralose on emulsion stability and controlled release of eicosapentaenoic acid encapsulated into a biopolymer matrix. ISAS annual conference, Galesburg. April 2012.
15. Diawara, F. Afithile, M., Gowda, M. N. and **Kouassi, K. G**. Investigation of the antioxidant activity of berry polyphenols in linoleic acid model. Diawara, Kouassi. ISAS annual conference, Galesburg, April 2012.
16. Deepak, K. Afithile, M., Gowda, M. N. and **Kouassi, K. G**. Screening polyphenol composition and antioxidant activity of berries. Kasarla, Deepak S. Afithile, Meshak,

Gowda, Netkal, M, Ahmad Tarab, and Kouassi, Gilles K. ISAS annual conference, Galesburg, April 2012.

17. Tamatam, M. and **Kouassi K. G**. Effects of various dextrins on stability and controlled released of microencapsulated bioactive compounds. . ISAS annual conference, Galesburg.
18. Gogineni, V.L., Boley, Mark M., Made Gowda, Netkal. M., and **Kouassi, K.G**. Encapsulation of Piroxicam in biopolymer layers: A study of the physical state and controlled release. Argonne Undergraduate Research, October 2011.
19. Debbeti, V., **Kouassi, K.G**. and Gowda, M.N. Transition Metal-Ethopropazine Complexes: Synthesis and Characterization, *2011 CSUI Research Conference and Symposium on Undergraduate Research in Science, Engineering and Mathematics at Argonne National Laboratory*, Chicago, IL, October 14, 2011.
20. Vishnuvardhan R. Thakkalapally**,** Cholkar, K. **Kouassi, K.G**. and Gowda, M.N Kinetics of Indigo Carmine Oxidation By Mn(III) Catalyzed by Ru(III) In acid medium, 2011 CSUI Research Conference and Symposium on Undergraduate Research in Science, Engineering and Mathematics at Argonne National Laboratory, Chicago, IL, October 14, 2011.
21. Mahendra, DC, **Kouassi, K.G**. and Boley, M. A size determination of nanoscale food capsules using AFM. CSUI Research Conference and Symposium.
22. Chapagain K. **Kouassi, K.G**. and Boley, M.: Using MFM to study magnetic ordering of functionalized multiwall carbon nanotubes (MWCNT)s. CSUI Research Conference and Symposium, Illinois, April 2011.
23. Vishnuvardhan R. Thakkalapally**,** Cholkar, K. **Kouassi, K.G**. and Gowda, M.N Kinetics of Indigo Carmine Oxidation By Mn(III) Catalyzed by Ru(III) In acid medium, 2011 CSUI Research Conference and Symposium on Undergraduate Research in Science, Engineering and Mathematics at Argonne National Laboratory, Chicago, IL, October 14, 2011.
24. Mahendra, DC, **Kouassi K.G.** and Boley M: A size determination of nanoscale food capsules using AFM. CSUI Research Conference and Symposium.
25. Chapagain K. **Kouassi, K. G**. and Boley, M.: Using MFM to study magnetic ordering of functionalized multiwall carbon nanotubes (MWCNT)s.
26. CSUI Research Conference and Symposium, Illinois, April 2011.
27. Akita, V., **Kouassi K.G**., and Gowda, M.N. Glycine oxidation by manganese (III) in sulfuric acid solution: Kinetics and mechanisms.
28. CSUI Research Conference and Symposium, Illinois, April 2011.
29. Diawara, F. and **Kouassi, K. G** .Study of phenolic compounds in berries and Berries products. Fatoumata D., **Kouassi K. G** and Netkal Made Gowda. Argonne Undergraduate Research at *the Argonne National Laboratory*, Chicago. October 2011.
30. Tournear, J., Gogineni, V and **Kouassi, K. G**. ISRC. Effects of hydrocolloids on the stability of emulsions systems containing lipophilic bioactive compounds. Tournear, J, Gogineni, V., L and **Kouassi, G. K.** ISRC Conference, Governors State University, Chicago, IL April 2014.
31. Tamatam, M. and **Kouassi K. G.** Effects of starch dextrins on stability and controlled release of microencapsulated bioactive compounds. ISRC Conference, Governors State University, Chicago, IL April 2012.
32. Chodavarapu, N. P. and **Kouassi, K. G.** Effects of sucralose and trehalose on the stability of eicosapentaenoic acid in biopolymer containing emulsion. Naga P.

Chodavarapu, **Kouassi K. G**. ISRC Conference, Governors State University, Chicago, IL 2012

33. Gogineni, Varalakshmi L., Boley, Mark M., Made Gowda, Netkal. M., and **Kouassi, K.G.** Investigation of syneresis in emulsions and amorphous systems. ISRC Conference Governors State University, Chicago, IL April 2012
34. Shashank Akku, **Kouassi, G. K**, Varalakshmi Gogineni, ISRC Governors state University 2012. ISRC Conference, Governors state University 2012
35. Deepak, K. and **Kouassi, K. G**. Screening the polyphenol composition and antioxidant activity of berries. ISRC 20. Governors state University 2012.
36. Fatoumata, D. **Kouassi, K. G**. Phenolic composition and antioxidant activity of berry tested against a linoleic model. ISRC Conference, Governors state University 2012.
37. Naini, Y.R. Dayakar R. G., Ahmad, A. **Kouassi, K. G.**, Gowda, M. N. Synthesis and antioxidant evaluation of transition metal–chlorpromazine complexes. ISRC Governors state University 2012.
38. Jagarlamudi P., Boley, M., Gogineni, V, Gowda, M.N & **Kouassi, K.G**., Microencapsulation of Vitamin K by complex coarcevation of chitosan and *k*-carrageenan: effect of surfactants and whey protein on emulsion stability, *Institute of Food Technologist Annual Meeting in New Orleans*, July 15, 2011.
39. **Kouassi K.G**. Jagarlamudi, P., Varalakshmi G. Koissi, M.C, **Kouassi, K.G.** Nanoencapsulation and controlled-release of lipophilic compounds: effects of pH on fuzzy clustering and surface properties (oral presentation**).** American Chemical Society (ACS) Regional Conference, Indianapolis, June 2011.
40. Jagarlamudi, P.,Varalakshmi G., **Kouassi, K.** G**.** Effect of water activity on the release profile of vitamin A encapsulated into a dual biopolymer system. (poster presentation) American Chemical Society (ACS) June 2011, Indianapolis.
41. Mahendra, D.C, **Kouassi K. G** and Boley M. A size determination of nanoscale food capsules using AFM. CSUI Research Conference and Symposium.
42. Diawara, F, Jagarlamudi P, Gogineni, V, Made Gowda, N, **Kouassi, K.G.** Polyphenol contents and antioxidant activities of blackberries, blueberries, and cranberries, *103nd Annual Meeting of Illinois State Academy of Science*, Eastern Illinois University, Charleston, IL, April 8-9, 2011.
43. Gogieni, V. L., Jagarlamudi, P., Boley, M. ,Made Gowda, N. and **Kouassi, K.G**. , Nanoencapsulation of vitamin K into a multi-polymer system using power ultrasound, *103nd Annual Meeting of Illinois State Academy of Science,* Eastern Illinois University, Charleston, IL, April 8-9, 2011.
44. Thakkalapally, V, R., Akita, V, Cholkar, K, **Kouassi, K.G**, Made Gowda, N. Ruthenium(III) Catalyzed Oxidation of Indigo Carmine by Manganese(III) in Acid Medium: A Kinetic and Mechanistic Study*22nd Annual Illinois Student Research Conference at EIU*, Charleston, IL, April 1-2, 2011.
45. Palakurthi, B. K, Akita, V, **Kouassi, K. G**., Gowda, M. N. Kinetics of acetylcholine oxidation by Manganese(III) in Sulfuric acid solutions, *22nd Annual Illinois Student Research Conference at EIU,* Charleston, IL, April 1-2, 2011.
46. Debbeti, V., **Kouassi, K.G**. and Gowda, M.N. Transition Metal-Ethopropazine Complexes: Synthesis and Characterization, *2011 CSUI Research Conference and Symposium on Undergraduate Research in Science, Engineering and Mathematics at Argonne National Laboratory,* Chicago, IL, October 14, 2011.
47. Vishnuvardhan R. Thakkalapally**,** Cholkar, K. **Kouassi, K.G.** and Gowda, M.N Kinetics of Indigo Carmine Oxidation By Mn(III) Catalyzed by Ru(III) In acid

medium, 2011 CSUI Research Conference and Symposium on Undergraduate Research in Science, Engineering and Mathematics at *Argonne National Laboratory*, Chicago, IL, October 14, 2011.

48. Chapagain K. **Kouassi, K.G**. and Boley, M.: Using MFM to study magnetic ordering of functionalized multiwall carbon nanotubes (MWCNT)s. *CSUI Research Conference and Symposium*. Chicago, Illinois, April 2010.
49. Sherman, L, Jagarlamudi, P, Gogieni, V.L., Boley, M, Made Gowda, N. and **Kouassi, K.G**. Microencapsulation of vitamins A and E into a dual biopolymer system: effect of water activity on release profile, *103nd Annual Meeting of Illinois State Academy of Science*, Eastern Illinois University, Charleston, IL, April 8-9, 2011.
50. Jagarlamudi, P., Gogineni, V.; Gowda, N, M., Boley, M., Gowda, M.N. and **Kouassi K. G** Micro/nanoencapsulation of vitamin E and effect of various factors on its release profile. ISAS annual meeting. Charleston, Illinois, USA. April 2011.
51. Jagarlamudi P., Boley, M., Gogineni, V, Gowda, N.M, & **Kouassi. K. G**. Microencapsulation of Vitamin K by complex coarcevation of whey-protein-chitosan matrix: effect of surfactant on emulsion stability. *Annual IFT meeting*. June 2011, New Orleans.
52. Jagarlamudi, P., Ahmad, T., Niangoran, K, and **Kouassi, G**. K. Fermentation-induced change in phenolic profile and antioxidant capacity of cocoa beans. *ACS Regional Meeting, Indianapolis*, June 2011.
53. **Kouassi, K.G.**:"Nanoencapsulation of omega-fatty acid into a biopolymer matrix: effect of cocoa polyphenols on oxidative stability" Oral Presentation *ACS annual meeting in San Francisco*. March 21-25. 2010.
54. Nottoli, K. Teriveedhi, **Kouassi, K. G. "**Impact of fermentation on the total phenolic and antioxidant activity of cocoa bean polyphenols". Effect of catechin on stability of nanoencapsulated vitamin K", Milikin University, Decatur, Illinois. April 2010.
55. **Kouassi, K.G**. and Floros J. High pressure induced changes in activity and structure of alkaline phosphatase and lactate dehydrogenase in buffers and milk. *IFT annual meeting*. Chicago IL. USA. July 27-August 01, 2007.
56. **Kouassi, K.G**. detection and therapy. *CrossOver 2004*. The Pennsylvania State University, USA, October 2004. **Kouassi, K.G**, Irudayaraj, J. MacArty, G. Educating the public on nanotechnology issues: *University and Industry Consortium Meeting*. April 2004, Harrisburg, USA.
57. **Kouassi. K.G.** Business Field Trip to Prague. Marketing strategy for an emerging economy. Oral presentation. Czech Republic. June 2002.
58. **Kouassi, K.G,** Roos, Y. Effects of glass transition, water and glycerol on enzyme activity in sugar-biopolymers systems. Oral presentation, *6th International Hydrocolloids Conference*, Guelph, Canada, July 2002.
59. **Kouassi, K**., Jouppila, K., Roos H. Y. Glass transition, water, and glycerol effects on sucrose inversion in pullulan-sucrose food systems. Oral presentation, *Nordic Rheology Conference* in Gothenburg, Sweden, June 2002.
60. **Kouassi, K.G**., Jouppila, K., Roos H. Y. Effects of κ-carrageenan on crystallization and sucrose inversion in lactose-sucrose food systems. Poster section at the *Nordic Rheology Conference*. Trondheim, Norway, June 2000.
61. **Kouassi, K**., Roos Y. Invertase activity in the glassy rubbery-state. Oral presentation at the *IFT Annual Meeting*. Chicago, USA, July 1999.
62. **Kouassi, K**. Effect of network forming biopolymers in sugar crystallization. Oral Presentation at the *Sugar-Link meeting*, University of Nottingham, UK, April 2000.

63. **Kouassi, K.**, Roos, Y. Glass transition and enzymes activity in amorphous sugar matrices. Oral Presentation and poster session. European Commission project-Workshop on *Molecular Mobility in Foods*. Camogli, Italy, May 1999.

International Examiner of Thesis of Doctor of Philosophy (PhD) Candidate: In January 2014. I was invited by the School of Graduate Research of the RMIT University in Australia as International Examiner for the Ph.D. thesis of Mr. Sobhan Savadkoohi. The thesis was entitled: "Molecular understanding of high pressure effects on the structural properties and microbial /enzymatic inactivation in condensed globular proteins".

OTHER SIGNIFICANT PROFESSIONAL POSITIONS HELD

- **April 2012–April 2014**: Secretary of the Illinois State Academy of Science (ISAS)
- **December 2011-present:** Member of the Editorial Board of the Journal of Analytical Sciences, Methods and Instrumentation (JASMI).
- **February 2012-2015:** Member of the Editorial Board of Advances in Nanoparticles (ANP).

- **Expert Reviewer for the following journals:**

  - Food Research International
  - Journal of Food Science
  - Food Hydrocolloids
  - Journal of Food Engineering
  - Journal of Agricultural and Food Chemistry
  - LWT- Food Science and Technology
  - Protein & Peptide Letters
  - Advanced Nanomaterials
  - Journal of Physical Chemistry (ACS)
  - Journal of Nanobiotechnology
  - Current Nanoscience
  - Advances in Nanoparticles
  - Journal of Encapsulation and Adsorption Sciences
  - Nanotechnology
  - Analytical Chemistry
  - Journal of Analytical Sciences, Methods and Instrumentation (JASMI)
  - ACS Symposium Book Series
  - Advanced Nanomaterials
  - IEEE Transactions
  - Colloid and Interface Science
  - Sensors
  - Journal of Nanotechnology Research
  - Toxicological and Environmental Chemistry
  - International Journal of Biological Macromolecules
  - Journal of materials Chemistry
  - Journal of Biomedical Nanotechnology
  - J. Chromatographic Sci.

TEACHING EXPERIENCE

COURSES TAUGHT

I taught about twenty courses and labs in physical chemistry, nanotechnology, food chemistry, inorganic chemistry, and general chemistry.

August 2009-July 2010: Director of the Graduate Program at the Department of Chemistry at WIU.
As director of the graduate program I was responsible for recruiting and advising 38 graduate students in the Department of chemistry at WIU. I was also assisting graduate students in the selection of thesis committees and representing the department at college and University level on issues related to the graduate program.

OTHER TEACHING ACTIVITY

Visiting Lecturer in the Department of Chemistry of the University of Illinois at Urbana Champaign (UIUC). I taught Quantum Chemistry CHEM 442 for upper undergraduate and graduate students in 2009.

SELECTED THESIS SUPERVISED AND COMPLETED

MS THESIS		
Student's name	**Year of defense**	**Thesis title**
Chodavarapu, Naga	2013	Effect of trehalose and sucralose on emulsion stability and controlled release of eicosapentaenoic acid encapsulated into a biopolymer matrix
Arkku Shashank	2013	A study of syneresis in biopolymer stabilized-emulsions containing whey protein.
Manassa Tamatam	2013	Effects of various dextrins on the stability and controlled release of eicosapentaenoic acid
Deepak Reddy	2013	Assessment of the phenolic profile and antioxidant activity of berries and their products by spectroscopy and LC-MS methods.
Fatoumata Diawara	2013	Relationship between polyphenol contents and antioxidant activities of blackberries, blueberries, and cranberries
Yakubreddy Naini	2012	Synthesis and characterization of transition metal complexes of chlorpromazine
Sridar Poloju	2012	Oxidation of lactic acid in sulfuric acid medium: Kinetics and mechanisms
Varalakshmi Gogineni	2012	Nano/Microencapsulation of poorly soluble drugs into dual polymer matrices: investigation of stability and controlled release.
Prathuisha J.	2011	Nanoencapsulation and controlled-release of lipophilic compounds: application of fuzzy clustering on interfacial properties

Vikram Akita	2011	Glycine oxidation by manganese (III) in sulfuric acid solution: Kinetics and mechanisms.
Vinod Teriveedhi	2010	Nano/Micro-encapsulation of linoleic acid in biopolymer matrices: effects of the physical state, Water, and quercetin on oxidative and thermal stability

BACHELOR THESIS OR HONOR THESIS COMPLETED		
Student's name	**Year of study**	**Thesis title**
Tournear, Jennifer	2012	A study of the stability of biopolymer-reinforced emulsion systems containing lipophilic bioactive ingredients
Fatoumata Diawara	2011	Polyphenol contents and antioxidant activities of blackberries, blueberries, and cranberries
Katheryn Nottoli	2011	Impact of fermentation on the total phenolic and antioxidant activity of cocoa bean polyphenols
Bartlomiej Redlinski	2009-2011	Nano/Microencapsulation of poorly soluble drugs into a dual polymer matrices: investigation of stability and controlled release.
Joseph Lucas	2009-2011	Synthesis, Functionalization and Characterization of CNT-Fe_3O_4 nanocomposites for cancer DNA and protein sensing
Michael Sherman	2009-2011	Effect of water activity on the release profile of lipohilic vitamins encapsulated into a dual biopolymer system
Meyer, Grant.	2008-2009	Inactivation of polyphenoloxidase and peroxidase in canteloupe and avocado purées using power ultrasound.

GRANTS

1. PI, "Nanoencapsulation of vitamin A and E into *kappa*-carrageenan-whey protein concentrate (WPC) matrix using power ultrasound." 2012. Ninesigma.

2. PI, "Investigating the molecular basis of enzyme and microbial inactivation using power ultrasound "Office of Sponsored project" 2009.

3. Research Support from Mars Confectionery, Elisabethville, Pennsylvania: I received a differential scanning calorimeter (DSC) of $35,000 from Mars, California. 2009.

4. PI, "Development of magnetic biosensor for detection of prion protein using carbon nanotubes-magnetite nanohybrids", 2008. Research Corporation.

5. PI, Development and characterization of gold-coated iron oxides nanoparticles for biosensor development 2008. NSF.

6. Co-PI, "Synthesis and Characterization of Conductive Polymers involving Polyfuran" submitted to the National Science Foundation, NSF in November 2007 (not funded).

7. Co-PI, submitted a proposal for a grant competition to the USDA-CSREES-FY 2007 NRI71.1 Improving Food Quality and value Program in January 2007, as Co-Principal Investigator (Funded).

8. Co-PI, submitted a proposal for a grant competition to the USDA-Pennsylvania Non thermal processing for Food Quality improvement 2005 (Funded)

9. PI, I was awarded the University summer research grant stipend in October 2007. The proposal was entitled "Investigating the effects of high pressure processing on texture, color, and enzyme activity of cantaloupe and pineapple slices (Funded).

10. PI, University Research Council (URC) of Western Illinois University in November 2007. The proposal was entitled "Nano-microencapsulation of bioactive ingredients using a dual biopolymer emulsion method." (Funded)

AWARDS

1. Award of Best Research paper presented at the Annual meeting of the Illinois Academy of Science meeting in 2012 at Knox College Galesburg, Illinois. Dr. Gilles Kouassi (Adviser) Jennifer Tournear, Student presenting.

2. Award of Best Research paper presented at the Annual Meeting of the Illinois Academy of Science meeting in 2010 at Eastern Illinois University, in Charleston, Illinois Illinois. Dr. Gilles Kouassi (Adviser) Prathuisha Jagarlamudi, Student presenting.

3. Professional Achievement Award (based on Teaching, Research, and Services) 2012, 2011, and 2009.

4. Research Support Award (OFS): April 2012 for ACS conference in San Diego, California, April 2011 FOR ACS conference in New Orleans, April 2010 for ACS conference in San Franscisco, April 2009 for ACS conference in Salt Lake City, Utah.

5. Nordic Rheology Society (Nordic rheology conference) outstanding student paper award. Award received in May 2002.

6. Chancellor Grant, University of Helsinki. The award was received in June 2000.

PROFESSIONAL AFFILIATIONS & MEMBERSHIPS

Professional member of the Institute of Food Technologists (IFT)
American Chemical Society (ACS)
American Society of Quality (ASQ)
Nordic Rheology Society (NRS)
Illinois State Academy of Science (ISAS)

ADDITIONAL EXPERIENCE

Summer 1986 and 1987. I worked at the Textile Union of Ivory Coast (UTEXI) in Dimbokro. I was working in the cotton purification unit.

1990-1991. Part-time employee at Michel Eynard Confectionery in Abidjan (Ivory Coast). I worked in the bakery and ingredients unit.

KNOWLEDGE OF LANGUAGES

French, first language-Excellent
English, Education and working language-Excellent
Finnish-very good
Spanish-moderate
Baoule: Excellent

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