

**Minutes of the  
NC 1023 Annual Meeting  
October 5-7, 2013  
LSU, Baton Rouge**

**Participants** (28 members)

Swamy Anantheswaran, Kayanush Aryana, V.M. Balasubramaniam, Sheryl Barringer, Sam Chang, Ashim Datta, Kirk Dolan, Carmen Gomez, Gonul Kaletunc, Sundaram Gunasekaran, Dennis Heldman, David Jackson, Soojin Jun, Kumar Mallikarjunan, kasiviswanathan Muthukumarappan, Jose Reyes, Michael Rogers, Roger Ruan, Shyam Sablany, Cristina Sabliov, Fernanda San Martin, Paul Singh, Jeyam Subbiah, Pawan Takhar, Jose Reyes, Lester Wilson, Yixiang Xu, Wade Yang, Yanyun Zhao

**Monday, October 7, 2013**

8:04 am Kai Aryana welcomed all to NC1023 meeting at LSU.

8:10 am John Russin, Vice Chancellor of LSUAg Center welcomed all and mentioned about weather and no artificial sweeteners (Louisiana is a sugar state). He indicated strong supports for agricultural industries, refining, fuel natural gas, and aquaculture etc. He pointed out an importance of this meeting, federal grant opportunities, encouraged multiple investigators to build up a multistate network and proposal opportunities.

**8:12 am Introduction**

Kai turned over the meeting to Fernanda, a chair and she welcomed everyone.

She commented on an excellent reception last night.

Using the power point slides, the Chair talked about the overall view of current agenda, Hongda (on vacation)' comments and email (prior to USDA updates) and Ad hoc meeting (who may be involved).

She commented on rewrite of a new proposal and CoFE meeting.

8:17 am Fernanda suggested self-introduction to the members.

She briefed updates of USDA that she received from Hongda by email.

Farm bill

FY 2014 Appropriations

AFRI in FY 2014: fellowship grant program, food security, food safety, childhood obesity prevention, water

8:21 am Fernanda asked David Jackson, the administrator, to say a few words.

David Jackson stated the rewrite process over the website of NC 1023.

The current project will expire by September, 2015 (probably it's better to rewrite and evaluation of the new proposal by January of 2014)

Evaluation and verification indicators (five areas) has been described.

Pointed out 2-3 significant impact statements and evaluation for next project

He talked about a new USDA report system (REEport): decent station version multistate project reports (impact statement and publications) via. REEport to be compiled by the NC group for USDA station reports.

Ahim: asked about individual multistate report and NC1023 multistate group reports in the Reeport system. David answered. Rewrite committee will compile and submit our overall report.

He addressed travel support from each station, salary allocations based on multistate projects, by commenting on Nebraska capacity funds, hatch and multistate formula funds for faculty salary, collaborative proposal development (food engineering, bioprocessing etc.) and other funding sources, i.e. NSF, NIH, industrial funds (USDA is not only funding provider we have to rely on)

We need to file annual report, meeting minutes within 60 days after this meeting.  
A final report should be submitted till September 2015.

#### 8:42 am **Organization of objective committees**

Fernanda pointed out:

1. Amend current objectives

2. Ad hoc committees: We may have to restructure ad hoc committees

Muthu: Objective 1a. Restructure and review is needed.

Bala: Objective 1b. He addressed that two years ago, Addressed NC 1023 collaboration efforts such as non-thermal processing sessions, proposal submission to USDA with subjects of alternative food preservation and non-thermal processing (Virginia + OSU) and multistate textbook project

Ashim: Objective 1c. Rewrite for modeling

Mark Morgan was a chair for Objective 2 but he didn't show up. He was collecting lab materials from station members. We need to look for his replacement (perhaps Jose?)

Objective 3 (extension component). Gonul addressed the collaboration amongst Columbia, OSU at Columbus and New Mexico State.

Lester: don't wait till the last minute.

Roger: we need to rewrite objectives (if needed) and formulate the committee right now. No name change is needed. We need to have all our members involved for objective rewrite.

David: We can just tune the draft a bit for final submission next year if we can initiate a good draft at this meeting.

Muthu: We need to modify the objectives

Paul: Current agenda doesn't include objective rewrite

Ashim: We could discuss it right now.

9:00 am Fernanda reviewed last year minute and our current objectives

She intended to structure the rewrite committee: Roger (chair-elect)

Keyam: Can the sustainability be added?

Paul: Due to the USDA budget cut, other funding agencies should be our targets.

Human body gut = food processing. We can bring some issues to appeal to other funding agencies. Processing for bioavailability would be one good example.

Need to include some language to strengthen our objectives.

Dennis: Health, processing efficiency, energy and water efficiency

Ashim and Bala: sustainability

Dennis: Sustainability needs to be specifically interpreted.

Gonul: Agree

Lester: integrating both extension and education  
David: Our integrated approach can be recommended. (research + teaching or research + outreach)  
Jose: Addressed importance of 'teaching' our 'research' in a class.  
Roger: don't touch Objectives 2 and 3. Only Objective 1 needs to change  
Lester: Objective 1 needs to feed Objectives 2 and 3. They are connected  
Roger: we need to focus on research component.  
Ashim and David: research and teaching or research and extension  
Kumar: how to accomplish and access the outreach (no specifics in current project descriptions)  
Ashim: USDA may feel we are doing the same.  
David: I don't think so. The outline can be the same. Structure is fine  
Dennis: Let's have each objective rewritten including research, instruction and extension  
Yixiang: Packaging should be included.  
Paul: There will be other NC meeting specialized for packaging

Fernanda: shall we start rewrite up the objectives?  
Kumar and Bala: No stakeholder input was clearly identified.  
David: Who is our stakeholder? We need to identify it.  
Lester: Environmental factors should be in consideration  
Dennis: Food engineering won't go away; however, our interpretation would change. We may need to break the box of 'processing' and move to integrate new demands into our objectives.  
Paul: We can organize IFT symposium based on stakeholder inputs, safety, and processed foods  
Sam: We should food preservation technology  
Lester: There was a resistance to have stakeholders attend in our former NC meeting.  
Kumar: We can include the stakeholders (advisory group input) in our proposed plans and appeal to USDA.  
Sam: Can we include storage and shelf life in the objective statements?

9:38 Fernanda: revise the objectives  
Key words: safety, health, quality, and sustainability  
Utilize innovative methods to characterize food and related materials (kinetics, properties, and packaging)  
Develop new and improved storage, processing, preservation and packaging technologies  
Develop mathematical models to enhance understanding of and optimize food processes  
Roger: Classify them more systematically  
David: Watch out the use of 'Health'  
Jose: No assessment of teaching  
Sam: Develop and improve pedagogical methodologies to enhance learning of food engineering principles assessment  
Gonul: have 2a and 2b instead of separate 2 and 3  
Break  
10:24 the meeting resumed by Fernanda  
Keyam: Itemize the Objectives based on the subjects.

Sustainability should be an overall broad topic.

Dennis: Process efficiency should be emphasized as well.

Yanyun: Adding value added product, by-product utilization?

Perhaps link Objective 3 with Objective 1

Roger: Optimize for what? Max quality, max energy utilization, minimize cost?

Food, structure, CT scan, multiscale, and nanoscale can be key words in consideration.

Paul: We should mathematical modeling as a separate item.

Shyam: Add material science techniques

**Objective Committees:**

Objective 1: Shyam, Pawan, Jeyam, Mike, Carmen

Objective 2: Bala, Yanyun, Dennis, Wade, Yixiang, Kai, Sastry

Objective 3: Ashim, Paul, Pawan, Kumar, Mukund

Objective 4: Gonul, Lester, Ashim, Bala, Paul, Jose, Fernanda, Rich, Kirk, Sheryl

Fernanda: email the draft to all the members

**10:55 am Muthu briefed IFT food engineering division (FED)**

Officers

Conference calls every even month at 11:00 am ET

FED undergraduate scholarship

IFT 2014 meeting symposium planning – deadline Nov 14

IFT 2014 annual meeting FED social – how can we be sustainable? Fundraising

Academics + industry partnership

Symposia speakers => keynote speakers

No guaranteed symposium for the division. Join symposia between non-thermal and FED

Member of the Month

Three topics (Plan of work): funding decline, teaching engineering to non-engineering students, and sustainable engineering

Division champion team (DCT) feedback –very positive on the FED activities

FED undergraduate scholarship: The applicants should be IFT student members

Food engineering track description

Profile photos by October 31

Monthly meetings by emailing

Social event working with Katie

**Session proposals (Due Nov 13)**

Processing focused on the ‘consumer’ aspects and feedbacks

Dennis: Identify the speakers based on topics, better communications with the audience

Cristina, Ashim, and Gonul: The general themes should meet real questions from real people.

Paul: what is food process? Kumar, Muthu, Lester, Yanyun, Cristina

Nanotechnology: Cristina, Carmen, Xu

Non-thermal processing: Bala, Roger

Engineering of food: Gonul

Scholarship of teaching and learning: Jose, Ashim

Engineering for health: Mike

Muthu disclosed his presentation at 11:45 am.

11:47 Bala addressed

Multistate collaboration: One book high pressure processing  
36 chapters with 5 different headings  
Anticipated publication date: summer 2014  
2014 International non-thermal processing workshop (Oct 21-23, 2004)  
Just completed 2013 workshop in Brazil  
Emphasis on non-thermal in preserving global health and wellness and combating obesity

Paul: do we have a logo for NC1023?

Morning session was adjourned at 11:55 am.

2:26 pm afternoon session resumed with **Station reports**

Jose: Commented on improvement of math skills for food science students that new faculty challenges. Some level of segregation might exist. Enough time to assess different strategies. He emphasized on scholarship for teaching and learning.

Kumar: Re-think about the skill what is needed from industries? Kinetics of chemistry should benefit the students.

Jose: Industrial needs have to be clearly identified. Energy mass balance, unit operation and processes (liquid, solid) re-assess the strategies.

Kumar: Lab handout can be boring. Make it interesting with more pictures and animations.

Jose: Field trips for equipments and traditional food engineering discipline would be too sequential and outdated. How often do we have feedback from the students?

Paul: Found very few audience in our former IFT teaching session (isolated). It included exemplary presentations, though.

Ashim: IFT also learned from that opportunity.

Kirk: Any challenge to teach food engineering to 'engineering' students.

Kumar: Yes. They already learned thermodynamics, heat and mass transfer phenomena. We needed to have different emphasis on food process operations such as membrane, extraction, evaporation and such.

Cristina: They are still struggling with some math.

OSU: We used to teach engineering students transport phenomena

Ashim: Need to get through the IRB (Institutional Review Boards) to be accredited.

2:53 pm **Station reports**

Ashim: integrating simulation to enhance learning in lecture and lab courses active learning, reinforcing basic concepts, more complex situation multidisciplinary situation (microbiology + transient heat mass transfer), improving problem solving skills  
He discussed about perks/benefits of the software (coupling COMSOL into MS Excel, collaboration possibilities)

Gonul: what is the gain for food science students?

Swamy: COMSOL purchase in the department is not always feasible.

Ashim: there are many benefits from the use of COMSOL codes.

3:20 pm Ashim: resources for computer aided food process engineering entries to Wiki websites ([www.foodprocessmodel.org](http://www.foodprocessmodel.org))

Clustrmaps shows how many hits have been made over the world.

What is our next step? Properties, how to measure properties, video based tutorials.

Is this a good idea? Worth doing? Is this planned activity feasible for a station to accomplish without making it a major project?

What should be in the video tutorial? Make one or two example video for our showcase.

Lester: we have impact statement based on what Ashim had in his website and number of hits.

### 3:32 pm **Discussion for engaging in new collaborations**

Paul: Web based teaching materials for food engineering courses

He addressed his personal websites, [Rpaulsingh.com](http://Rpaulsingh.com) (revised for the use of students' smart phone)

An exemplary Lecture module can be to let students have take-home video and back up class teaching to reinforce their learning. He demonstrated one module regarding 'Steady state conduction in rectangular coordinates'.

Camtasia is a very useful drawing tool.

He introduced virtual experiments in food processing (run on the web or smart phones)

We need more than pdf version... should include the interactive description or video link

He demonstrated the interactive features of his new textbook (introduction to food engineering, co-authored with Dennis, 5<sup>th</sup> edition). It is a first engineering animation textbook of Elsevier publisher.

He stated that a great emphasis on collaboration through NC 1023 has been made for the 5<sup>th</sup> edition (lots of inputs and feedbacks, and participations).

Ashim: Addressed multiple free software to create virtual classes. One Youtube website (problem 13.8.5. by Ashim Datta) was introduced.

We can make some small teaching module using Camtasia or other sophisticated software

### 4:24 pm **Station reports**

Cristina: Update on nanotechnology book – collaboration

Ravussin and Aryana earned \$2.5MM from NIH

She addressed IUFOST 2014 at Montreal and food nanotechnology theme

Abstract due March

### 4:31 pm **Discussion for engaging in new collaborations**

Gonul: Present her collaborative NIFSI project (Use of chlorin dioxide for fresh produce: OSU, Iowa State, New Mexico State).

Development of educational materials was planned.

OSU fresh produce safety initiative: [fabe.osu.edu/kaletuncfpsi/animations](http://fabe.osu.edu/kaletuncfpsi/animations)

Jeyam: Commented on industrial funding, radiofrequency heating for low moisture foods, potentially collaborating with Michigan State U. Beef safety team.

Collaboration with Kumar for USDA proposal (didn't work)

We should list the collaborative proposal development with NC members, as an outcome of the NC 1023 station collaboration.

**CoFE meeting April 7-9 (M-W)**

Themes: Simulations in advanced food engineering (SAFE), Engineering safe foods, and Engineering foods for health: Perhaps we need to delete the false impression of 'GMO' approach

Jeyam planned to organize the technical team for CoFE sessions.

**SAFE**

Plenary: Pawan, Sohan

Concurrent sessions

Process modeling: Ashim

Gut: Paul

Microbial modeling: Kirk

Modeling non-thermal processes: Mukund

**Engineering safe foods**

Plenary: Sastry, Peter

Low-moisture foods: Bradley, Ann (Natick)

Process validation: Kumar, Steven Lombardo

Biosensor: Jose, Kamran

Non-thermal processing: Bala, Carmen, Moralru

Fresh Produce safety: Gonul, Lester

Advanced thermal processing: Juming, Soojin

**Engineering food for health**

Plenary: Mike, Vijay Arora

Extraction of bioactives: Hao Feng

Encapsulation/targeted delivery of bioactives: Carmen, Rohan

Stability of bioactives: Gonul

Digestive health: Gail

**Other topics**

Sustainable food processing: Denny

Advanced imaging techniques: McCarthy, Ngadi

Food properties: Muthu

Engineering education:

Food packaging: Shyam

Others: combat rations: Juming, Tom yang, Christopher Doona

Cold-chain management: Denny

Industrial involvement is key.

Fundraising: Kumar, Bala, Denny, Paul

Target: \$5,000

U of Kentucky: Opening of food engineering position

The meeting was adjourned at 6:01 pm

## **Tuesday, October 8, 2013**

Tuesday meeting was called at 8:10 am

Fernanda briefed the time frame and agenda for the 2<sup>nd</sup> day meeting and talked about the general objectives

Lester: Roger will have to formulate the rewrite team.

David: some important deadlines found in the NIMMS website

September 17, 2014: Intent to renew the project

October 15, 2014: Objective revision

November 15, 2014: Deadline for the participant to indicate their interaction with groups in NC

Dec 1, 2014: submit to NIMMS

Dec 15, 2014: review the project and send off

Late March-early April, 2015: We will have a response

If there is a problem or recommendation for modifications between April and January, 2015

October 1, 2015: New project will begin

Bala: We can store all the files at web based hard, i.e. dropbox so that all the members will be able to track and upload their updates.

Lester: We will need to include the accomplishment statement for our new proposal.

Fernanda: Collect all the station reports and hand in to Roger

David: NC 1036, do we need to change the number?

## **8:29 am Break-out session for project objectives to be discussed and tuned**

9:23 am the meeting continued after break-out session

The Objective committee summarized the revised objective statements as follows.

1. Characterize multi-scale physical, chemical and biological properties of foods, biological, and engineered materials
2. Develop new and sustainable technologies to transform raw materials into safe, high quality, health-enhancing and value added foods through processing, packaging and preservation
3. Develop mathematical models to understand, predict and optimize for improved safety and quality of foods
4. Disseminate knowledge developed through research to enhance student and other stakeholder learning and practice

## **Discussion and brainstorming process**

1. Concern has been expressed for the use of ‘engineered materials’

What is the definition? Packaging, composite or nano properties to interact with cells and biological systems should be addressed.

2. Add ‘nutrition’ and/or ‘functional foods’ to Item (e)

How about sustainability of current and novel technologies

3. Paul addressed the logic behind the objective statement

Develop mathematical models to understand, predict, and optimize for safe and improved quality of foods, and to enhance consumer’s health.



4. Objective 4: Is ‘research’ only a dissipating tool to enhance learning of students and other stakeholders? We may have to rephrase the sentence. Perhaps ‘Research and novel pedagogical methods’? Here ‘methods’ can be web-based technologies etc.

Roger: Addressed the plan for organization of rewrite committee and potential timelines.

First draft due: one month after this meeting.

Second draft due: two months after this meeting (Google doc)

David: Concerned about the next meeting time scheduled behind the submission due (October 15) for new objective statements. Final version may be discussed during CoFE meeting.

Fernanda and Roger: Will email the current proposal along with draft summary objectives to the rewrite committee right after the meeting.

### **Business meeting**

Future meeting locations: 2014 meeting will be co-located with the non-thermal processing workshop at The Ohio State University (host by Dennis). The meeting time will be October 19-21, 2014.

Potential locations for 2015 meeting: Wisconsin (Guna) or Oregon (Yanyun)

New secretary election:

2014: Pawan

2015: Yanyun Zhao

2014 Chair: Roger, Vice Chair: Soojin

10:27 am Roger moved to adjourn the meeting, Yanyun seconded, and Fernanda adjourned the meeting.

2013 NC 1023 annual meeting was adjourned at 10:30 am.