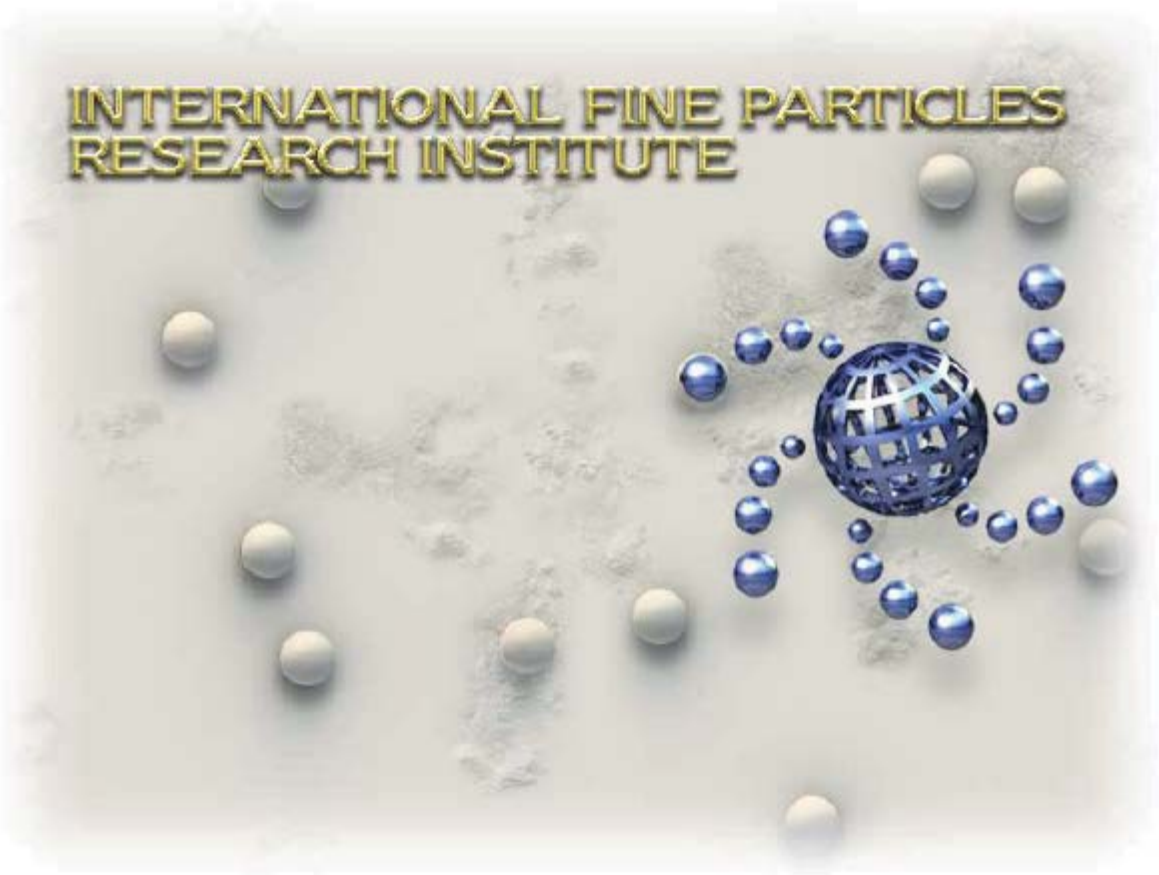


2018 Annual General Meeting
Briefing Paper

Prepared by Jim Michaels
May 30, 2018

Introduction

IFPRI's 40th annual general meeting fast approaches, and it's time to get prepared! As always, we've got a packed agenda. Due to growth of the technical program, we've made a few modest changes to the organization of the meeting: project reviews extend into Tuesday, and prioritization of proposals is done on Wednesday morning, in place of the Pfeffer symposium. The high-level agenda is:

- Sunday: business meeting (members and prospective members only); presentation by host Wilson Poon; review presentations
- Monday: project reviews
- Tuesday: project reviews; technical program strategy development (brainstorm new briefs)
- Wednesday: proposal prioritization; poster session; banquet
- Thursday (members and prospective members only): project, review, and brief selection; final business meeting

Except for the Sunday business meeting and a short members-only discussion of projects on Tuesday, all meeting participants (members, prospective members, and academics) are encouraged to attend all sessions on Sunday-Wednesday. Thursday is reserved for finalizing the technical program and budget.

The meeting is preceded by a suspension rheology workshop on Friday and Saturday. To control its size, each IFPRI member is invited to send one representative to the workshop.

Willie has also organized the social program which includes the banquet on Wednesday (not to be missed!), IFPRI's world-famous sporting event, and in honor of our 40th anniversary a whisky (NOT whiskey) tasting, which I'm told will include a wee dram of a 40-year-old single malt.

This briefing paper summarizes the status of the technical program. Revised renewal proposals and new project proposals are posted on the IFPRI website. Please download and read these before the meeting and be prepared to discuss them on Tuesday. All other AGM materials – presentations, abstracts, and posters – will be posted for download from the IFPRI website prior to the meeting.

Jim Michaels
VP, Industry-Academic Liaison
May 30, 2018

Table 1: 2017-2018 Technical Program

Type	No.	M	C	SR	F	D	W	SE	Project	Research Associate	Institution	Country	End	Term
Projects	1				X	X			Creating Tuneable Agglomerates via 3D Printing	K. Hapgood	Monash U.	Australia	2020	2
	2	X				X			Prediction of Segregation	J. McCarthy	U. Pittsburgh	US	2020	2
	3	X	X			X			Flowability Assessment of Weakly Consolidated Particles	C. Hare A. Hassanpour	U. Surrey U. Leeds	UK	2020	2
	4	X	X	X				X	Development of Grindability Tests	J. Ooi	Edinburgh	UK	2018	2
	5	X			X	X			Relating Compaction Performance and Behavior to Process Conditions	A. Zavaliangos	Drexel U.	US	2018	2
	6	X			X				Spray drying at high temperature	A. Bayly	U. Leeds	UK	2018	1
	7		X		X		X		Molecular Self-Assembly	U. Wiesner	Cornell U.	US	2018	1
	8	X	X			X			Dry Powder Rheology	K. Daniels	NCSU	US	2018	1
	9	X	X			X			Die Filling of Aerated Powders	C.-Y. Wu	U. Surrey	UK	2019	2
	10	X	X		X			X	Model-Based Control of Crystallization	Z. Nagy	Purdue U.	US	2019	1
	11	X					X		Long Term Stability of Attractive Colloidal Gels	W. Poon	U. Edinburgh	UK	2019	2
	12	X					X		Deliquoring of Solvent Wet Filter Cakes	U. Peuker	TU Freiberg	Germany	2020	1
	13	X	X			X			Powder Mixing Rules	I. Govender	UKZN	South Africa	2020	1
	14	X			X		X		Crystal Shape Prediction	M. Doherty	UCSB	US	2020	1
Collab		X	X			X			Dry Powder Rheology	Daniels/Vriend	NCSU/Cambridge	US/UK	2018	n/a
		X				X			Segregation Prediction	McCarthy/Hill	Pitt/UMN	US/US	2018	n/a
Reviews	3			X					Grinding Aids	Arno Kwade	TU Braunschweig	Germany	2018	
	4	X	X		X		X		Boundary Layer Characterization (Extrusion)	R. Bonnecaze	U. Texas	US	2018	

M=modeling; C=characterization; SR=size reduction; F=formation; D=dry systems; W=wet systems; SE=systems engineering

Status of Technical Program

Full Projects

Fourteen full projects are in progress. Two are in their sixth year and will end this year: Jin Ooi's milling project and Antonios Zavaliangos' compaction project. Three projects are at the three-year renewal stage. We received renewal proposals for two of these: Karen Daniels dry powder flow project and Uli Wiesner's crystallization project. Andrew Bayly asked to defer his renewal until next year's AGM because of his late start in year 1. He will attend this and next year's meeting but will not receive funding for the 2018-2019 year.

Collaboration Projects

Two collaborations were chartered last year, however only one was completed: Karen Daniel's collaboration with Nathalie Vriend. Nathalie will attend the AGM and present the results of this project.

Reviews

Two reviews were commissioned this year: grinding aids (Arno Kwade) and boundary layer characterization in extrusion (Roger Bonnecaze). A third review on flow characterization of hygroscopic powders was not placed due to strong overlap of the brief with Jamie Cleaver's review on caking. I know that there was some disagreement about this decision, so I strongly encourage members who want a review placed on this topic to revise the brief and clarify how it differs from the earlier review.

We also were expecting Stefan Heinrich to present the gap analysis on systems engineering in particle technology that we commissioned in 2016. Unfortunately, he was unable to complete this. Paul Mort has been organizing activities in this area and will present a status/overview at the AGM.

Other activities

The final project that we funded last year is the DEM "round-robin". Jonathan Seville (U. Birmingham) is coordinating this program. He will attend the AGM on Sunday to give an update.

Briefs and Proposals

Last year we agreed to solicit proposals against six project briefs. These are summarized in the following table, which lists all academics who were invited to submit proposals. Those that are crossed out either declined to submit something or never answered the invitation. We were successful in receiving at least two proposals for each project except for the computational project on surface transformations in milling. All of the proposals are available for download on the AGM meeting materials page. Karen Daniels' and Uli Wiesner's renewal proposals are also available there.

I requested proposals against the dispersion brief from three people, but only one (Jim Adair) submitted one before the winter meeting. Jim did not submit a revision. He did not agree with the comments that we provided him, and he initially considered withdrawing his proposal. I encouraged him to submit a rebuttal to our commentary and re-submit his original proposal. He did not write the rebuttal. I've included his original proposal with the AGM materials. Happily, we were able to solicit two additional proposals, from Claire Gaiani at the University of Lorraine and Irina Boiarkina at the University of Aukland.

As I write this, we do not know how many of these projects we'll be able to fund. This depends on the state of the budget and membership which we'll review at the AGM on Sunday morning. It is likely that

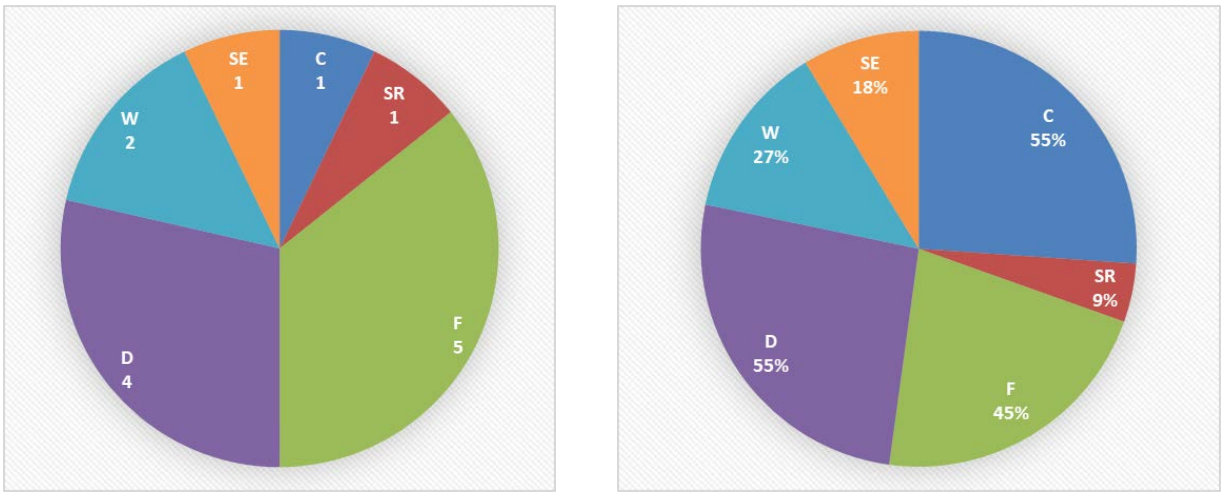
we will be able to grow the program; planning for 16 projects is not unreasonable. This is equivalent to selecting six projects from the two renewals and six new project briefs.

Table 2: Briefs and Proposals

Proposals			X		X	X			Powder Adhesion to Metal Surfaces	C. Csinka	U. Leicester	UK
										C. Sun	U. Minnesota	US
									Wetting and Dispersion of Powders	~~P. Luckham~~	~~ICST~~	~~UK~~
										J. Adair	Penn State	USA
				X			X			~~F. Lequeux~~	~~ESPCI~~	~~France~~
										I. Boiarkina	U. Aukland	NZ
										C. Gaiani	U. Lorraine	France
			X		X		X		Characterization of Spray Nozzles at Industrial Conditions	N. Ashgriz	U. Toronto	Canada
										U. Fritsching	U. Bremen	Germany
		X	X				X		Slurry and Paste Rheology	E. Koos	Leiden U.	Netherlands
										D. Blair	Georgetown U.	US
		X		X					Impact Transformations of Semi-Brittle Crystals	~~W.K. Liu~~	~~Northwestern~~	~~US~~
										D. Theodorou	NTU Athens	Greece
		X				X			Flow at Boundaries	N. Taberlet	U. Lyon	France
										C.F. Higgs	Rice University	US
Renewals		X			X				Spray drying at high temperature (deferred to 2019)	A. Bayly	U. Leeds	UK
			X		X		X		Molecular Self-Assembly	U. Wiesner	Cornell U.	US
		X	X			X			Dry Powder Rheology	K. Daniels	NCSU	US

Balance of the Technical Program

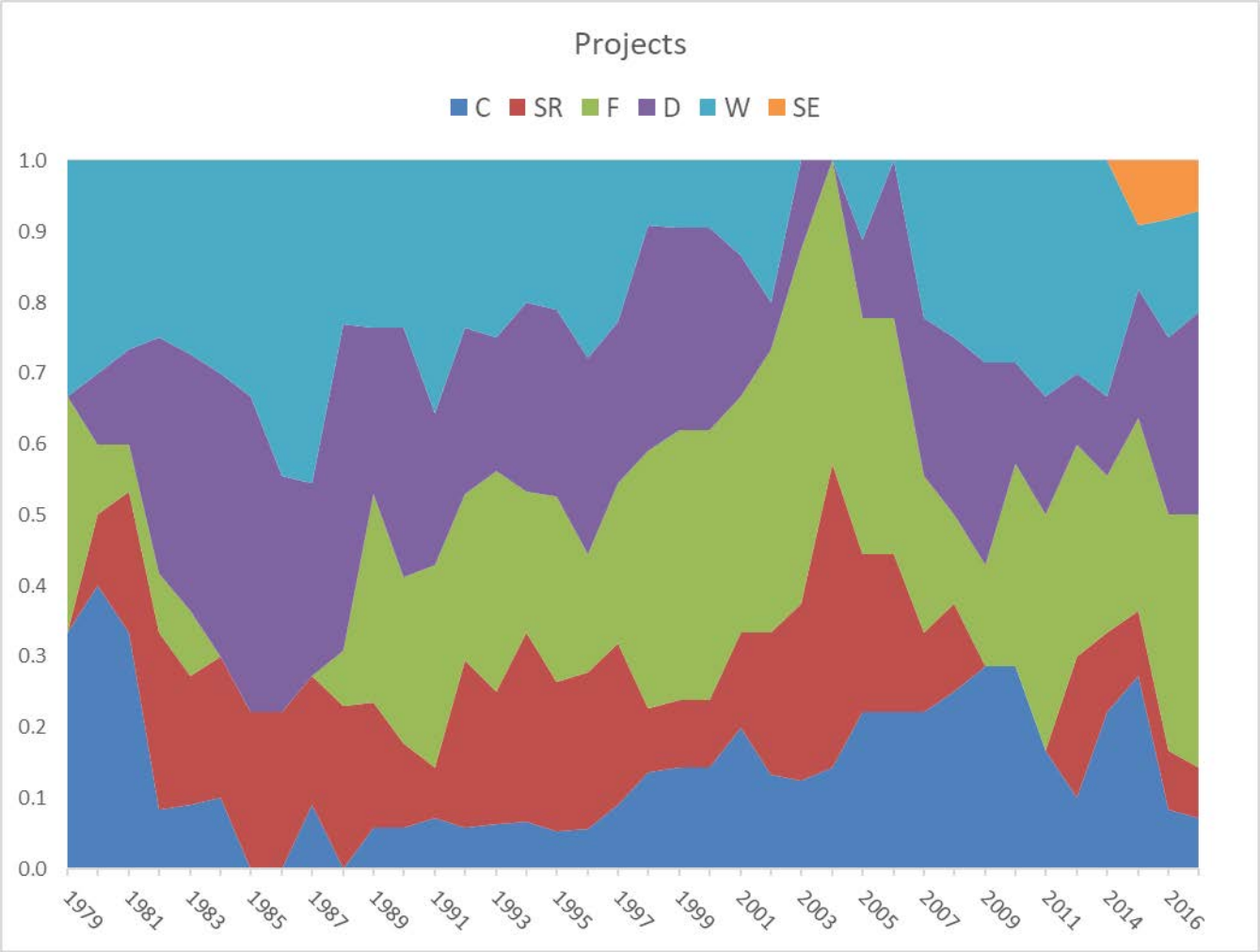
One of the challenges of managing IFPRI's technical program is to develop a project portfolio that is balanced and meets the needs and interests of our members. IFPRI veterans know that we use project categories to measure the balance of the program: wet systems, dry systems, formation, size reduction, characterization, and systems engineering. This categorization scheme is a bit arbitrary, as many projects belong to multiple categories. As a result, we recently began to assign multiple categories to each project. Both categorization schemes are shown the two tables above, with the red "X" denoting the master category. The two pie charts below show the project distributions in these two schemes.



Distribution of projects in IFPRI 2018 technical program
Left: one category per project; Right: multiple categories per project
(F=formation, D=dry systems, W=wet systems, SE=size enlargement,
C=characterization, SR=size reduction)

Based on the single-category scheme (left-hand chart), our program is over weighted in formation and dry systems. The multi-category scheme is more balanced, although it indicates that size reduction is underweighted.

To provide historical perspective to these distributions, I did a retrospective analysis of the project distribution of the IFPRI technical program back to 1979, using the single-category scheme. The following plot shows that the balance of the technical program has varied significantly over the years, with some categories disappearing for a few years. Presumably this mirrors changes in composition and research interests of the members.



Distribution of IFPRI projects 1979-2018

Process for Generating New Project and Review Topics

Tuesday's strategic planning session (aka project and review topic brainstorming) will be organized like last year:

- We will break out into six concentration areas this year: wet systems, powder flow, size reduction, particle formation, and characterization as before; and systems, which covers projects that span multiple area (for example, process control and process synthesis). The size of each concentration group will be determined by the size of the meeting and individual preference. Larger groups will be encouraged to break out into subgroups of 7-10 people. Sufficient time is set aside for concentration areas to break out, brainstorm, and then reform for reporting back and selecting one or two project briefs to be recommended for further development. No restriction will be placed on the number of review briefs that will be brought forward
- We are reserving Tuesday afternoon and evening as an "ad hoc" session for people to meet and, if inclined, write briefs together. We've rearranged the rest of the AGM agenda to block out this time. (Yes, you can write your brief in the bar)

- Each of us will still be prisoner in the concentration area we select for the brainstorming session. However, since brief writing is now separate, each of us can contribute to the completion of any brief we'd like to.

Finally, here are the elements of a good project brief:

- The problem or grand challenge is sufficiently fundamental and generalizable that an academic will be interested in working on it and the results can be published in the open literatures.
- The scope of the problem is clear, and it is sufficiently narrow that significant progress can be made in three years by a single graduate or post-doctoral student
- The problem or challenge is new, or at least unsolved. If the latter, the brief should be clear about what IFPRI feels needs to be addressed
- The objectives of the project are clear
- At least two academics should be identified for the project. "Some guy at UNSD at Hoople" is not sufficient. If more than three names are submitted, they should be prioritized

Norm Wagner said that a successful IFPRI project is one that could lead to a new chapter being written in an appropriate text book. I think this is good guidance for the type of project we like to fund.

The criteria for a good review brief are similar. Again, when you write a brief, ask if you would be interested in writing the review if you were a professor. For example, a review of scale removal techniques from heat exchanger pipe may not be easily placed.