IFPRI BRIEF TEMPLATE

Check One: ☐Project   ☐Review   ☐Collaboration
                 ☒Workshop   ☒Other

Descriptive Title	Enhanced Particle Characterization of Complex (Polydisperse and Multimodal) Systems
Title[1]	Enhanced Particle Characterization of Complex (Polydisperse and Multimodal) Systems
Technical Area[2]	Characterization, Wet/Dry
Date	06/22/2021
Short Description	Uncovering superior approaches for accurate and complete particle characterization of strongly polydisperse and multimodal systems. Including imaging, sedimentation, light scattering, hybrid approaches, etc. Opportunities for improved models and novel data analysis approaches using machine learning. This includes what industry really requires from reference materials (multimodal and polydisperse standards), sampling, setting specifications, in-line & online methods, etc.
Objectives	- Bring together academic & industry experts to discuss the magnitude of the challenges in this area, and gain agreement on the top-3 issues that need to be addressed. - Develop one or two IFPRI project briefs focused on meeting the major difficulties of characterizing polydisperse and multi-model particulate systems. .Perhaps discuss the development of multimodal and polydisperse standards. - This could be a round robin exercise
Scope	State of the art: - Understand current ==mathematical models for post-processing of light scattering data (smoothing, fitting, filtering, etc) focused on multimodal and polydisperse== systems. When do the models start to break down? - Drive international harmonization of proprietary fitting models across light scattering makes & models - Recent advances in conventional laser light scattering to improve insensitivity (to minor modes) and particle shape

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[1] Title used in meeting agendas and file archives
[2] One or more from the following list: W = wet systems; D = dry systems; F = particle formation; SR = size reduction; M = modeling; SE = systems engineering

	• Emerging quantitative imaging [optical, x-ray, electron], sedimentation, etc, or hybrid techniques and use of orthogonal techniques • Opportunities for machine learning or other novel approaches to improve analyses • Getting meaningful results in the presence of other scattering events such as droplets of other components, bubbles and thermal noise. • Lack of Standardization: • Instrument-to-instrument variability (within and across vendor platforms) • What do people want from a standard • Potential for establishing multimodal size standards to provide clarity on polydisperse accuracy (NIST or NPL presenter?) • Approaches to rational size specification setting Best practices: • Subsampling while avoiding non-representative measurement • Correlative microscopy

Recommended Speakers (4 or 5) (see yellow highlights above for potential topics)

Name	Institution	Email Address
	Instrument vendors	
Vincent Hackley (NIST)	NIST or NPL	
Thomas Linsinger	JRC (Ref stds)	Thomas.linsinger@ec.europa.eu
Wolfgang Witt	Sympatec / ISO Chair	wwitt@sympatec.com
Steve Ward-Smith	Malvern	Stephen.ward-smith@malvernpanalytical.com

Submitted By:

Name	Organization
Mike Gentzler	Merck Inc
Brian Levy-Polis	FMC
Wilson Poon	
Simon Lawson	Malvern
Bruno Hancock	Pfizer Inc
Paul Mort	Purude
Jan Vermant	ETH Zurich
Navin Venugopal	Corning
Andrew Santos	Sandia
etc	

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