IFPRI BRIEF TEMPLATE

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

Descriptive Title	LabRAM DEM modeling for device transferability and scale-up
Working Title[1]	LabRAM DEM Collaboration
Technical Area[2]	Powder Flow
Date	June 12, 2023
Short Description	There are many positive, model-guided experimental results of bulk property enhancement though dry coating of flow aid using a laboratory scale Resodyne LabRAM batch-mode device. NJIT group has shown that in general, LabRAM is best used as a material-sparing screening device for a given host-flow aid system. However, in many cases continuous devices such as a conical mill or simultaneous milling and coating using a Fluid Energy Mill (FEM) are preferred. The question becomes, how do we transfer LabRAM developed insight to other relevant production devices. *Alternate Device Selection*: For the benefit of IFPRI members, it would help if there were an effort generating device and scale specific collision dynamics information through DEM that would facilitate transferability from LabRAM testing to other more preferable devices, both at the lab or pilot scale as well as production scale. Generating information about host-host particle collision frequency and collision forces, normal and tangential, would help determine the required alternate process intensity and processing time. *Particle-scale to bulk-scale linking and calibration*: The other area where DEM could augment the Flow Aid Selection project is in developing calibration methods that could either predict a flow index if the Bond number is known or vice a versa.
Objectives	Generate device and scale specific collision dynamics information through DEM that would facilitate transferability from LabRAM

[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

	testing to other more preferable devices, both at the lab or pilot scale as well as production scale. Develop calibration methods that could either predict a flow index if the Bond number is known or vice a versa
Scope	

Recommended Contractors (2 or 3)		
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