Particulate Solid Research, Inc.

FLUIDIZATION SEMINAR AND WORKSHOP
BASEL, SWITZERLAND
SEPTEMBER 9-12, 2025

TUESDAY

08:00	REGISTRATION	
08:15	INTRODUCTION TO PSRI AND ITS TECHNICAL PROGRAMS	
08:30	A.	INTRODUCTION AND OVERVIEW
	1.	INTRODUCTION, TERMINOLOGY, AND PARTICULATE PROPERTIES
	2.	FLUIDIZATION REGIMES AND TRANSITIONS
10:30	BREAK	
10:45	3.	HYDRODYNAMICS OF FLUIDIZED BEDS
		▪ EFFECTS OF TEMPERATURE AND PRESSURE
12:00	LUNCH (PROVIDED)	
12:45	4.	GAS AND SOLIDS MIXING
14:45	BREAK	
15:00	5.	GAS SOLIDS CONTACTING, REACTION, MODELLING AND SCALE-UP
	6.	HEAT TRANSFER
17:00	ADJOURN	

WEDNESDAY

08:00 B. OVERVIEW OF INDUSTRIAL APPLICATIONS

09:00 C. GRIDS – GAS DISTRIBUTORS

- INTRODUCTION TO GRIDS (PRESSURE DROP ACROSS GRID)
- DESIGN OF VARIOUS TYPES OF GRIDS
  - PERFORATED PLATE
  - PIPE/SPARGER
  - EFFECT OF SHROUDS

10:00 BREAK

10:15 C. GRIDS – GAS DISTRIBUTORS (CONTINUED)

- JET PENETRATION
  - EFFECTS OF TEMPERATURE AND PRESSURE

11:30 D. WORKSHOP ON GRID DESIGN

12:00 LUNCH (PROVIDED)

13:00 E. PARTICLE ENTRAINMENT & ELUTRIATION

- INTRODUCTION
- MECHANISMS OF EJECTION INTO FREEBOARD
- SOLID FLUX PROFILE AND TDH
- ENTRAINMENT CORRELATION FOR BUBBLING & TURBULENT BEDS

14:30 BREAK

14:45 E. PARTICLE ENTRAINMENT & ELUTRIATION (CONTINUED)

- EFFECTS OF GEOMETRY
- ENTRAINMENT FROM RISERS
- EFFECTS OF TEMPERATURE AND PRESSURE

16:10 F. WORKSHOP ON ENTRAINMENT

- FCC/POLYETHYLENE EXAMPLES

17:00 ADJOURN

THURSDAY

08:00 G. CYCLONE DESIGN

- PRINCIPLE OF OPERATION
- NON-UNIFORM CYCLONES
- DIPLEG PRESSURE BALANCE
- FLAPPER & TRICKLE VALVES
- EFFECT OF DIFFERENT CONFIGURATIONS

09:30 BREAK

09:45 G. CYCLONE DESIGN (CONTINUED)

- EFFECTS OF TEMPERATURE AND PRESSURE
- DESIGN PROCEDURE
- COLLECTION EFFICIENCY

11:30 H. WORKSHOP ON CYCLONES

- CYCLONE VIDEOS

12:00 LUNCH (PROVIDED)

13:00 M. MODELING EXPANDED WITH CPFD SOFTWARE

14:30 BREAK

14:45 I. STANDPIPES

- THEORY OF OPERATION
- TYPES OF STANDPIPES
- AERATION EFFECTS
- STANDPIPE CAPACITY
- ANGLED STANDPIPES

17:00 ADJOURN

FRIDAY

08:00 I. STANDPIPES (CONTINUED)

- STRIPPING
- NON-MECHANICAL VALVES
- STANDPIPE CALCULATIONS

10:00 BREAK

10:15 J. DILUTE-PHASE PNEUMATIC CONVEYING AND CIRCULATING FLUIDIZED BEDS

- VERTICAL & HORIZONTAL FLOW PHASE DIAGRAMS
- PRESSURE DROP CALCULATIONS
- CALCULATION OF CHOKING, SALTATION, AND SLIP VELOCITIES
- FAST FLUIDIZATION, CIRCULATING FLUIDIZED BEDS
- BENDS
- EFFECT OF DIAMETER
- EFFECT OF PRESSURE
- FEEDING CONSIDERATIONS

12:00 LUNCH (PROVIDED)

13:00 K. DENSE-PHASE PNEUMATIC CONVEYING

- PACKED BED, FLUIDIZED-BED FLOW
- SLUG FLOW
- SELECTION OF EQUIPMENT TYPE

14:00 BREAK

14:15 L. PARTICLE ATTRITION

- TYPES OF ATTRITION
- ATTRITION TESTING AND MODELING

15:30 CONSULSION OF SEMINAR

15:45 ONE ON ONE Q/A TIME

- ASK QUESTIONS WITH DR. KNOWLTON
- ONE ON ONE/GROUP

16:30 END OF Q/A TIME