FLUIDIZATION SEMINAR AND WORKSHOP
HEIDELBERG, GERMANY
APRIL 10TH – 13TH 2018

TUESDAY, APRIL 10TH 2018

08:00	REGISTRATION		
08:20	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)		
13:00		4.	GAS AND SOLIDS MIXING
14:25	BREAK		
15:00		5.	GAS SOLIDS CONTACTING, REACTION, MODELLING AND SCALE-UP
		6.	HEAT AND MASS TRANSFER
17:00	ADJOURN		

WEDNESDAY, APRIL 11TH 2018

08:30 B. OVERVIEW OF INDUSTRIAL APPLICATIONS

09:30 C. GRIDS AND PARTICLE ATTRITION

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

10:30 BREAK

10:45 C. GRIDS AND PARTICLE ATTRITION (CONTINUED)

- SOURCES OF ATTRITION
- PARTICLE ATTRITION AT SUBMERGED JETS
  - GRID DESIGN
  - EFFECTS OF TEMPERATURE AND PRESSURE
- PARTICLE ATTRITION IN CYCLONES

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
- CORRELATION FOR BUBBLING & TURBULENT BEDS

15:00 BREAK

E. PARTICLE ENTRAINMENT & ELUTRIATION (CONTINUED)

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

16:15 F. WORKSHOP ON ENTRAINMENT

- FCC/POLYETHYLENE EXAMPLES

17:00 ADJOURN

THURSDAY, APRIL 12TH 2018

8:30 G. CYCLONE DESIGN

- PRINCIPLE OF OPERATION
- DIPLEG PRESSURE BALANCE
- FLAPPER & TRICKLE VALVES
- DIFFERENT CYCLONE TYPES
- EFFECT OF DIFFERENT CONFIGURATIONS
- EFFECTS OF TEMPERATURE AND PRESSURE
- DESIGN PROCEDURE
- COLLECTION EFFICIENCY

10:00 BREAK

10:15 G. CYCLONE DESIGN (CONTINUED)

- DESIGN PROCEDURE
- COLLECTION EFFICIENCY
- CYCLONE DESIGN CALCULATION

12:00 LUNCH (PROVIDED)

13:00 H. WORKSHOP ON CYCLONES

14:00 I. STANDPIPES

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

15:00 BREAK

I. STANDPIPES (CONTINUED)

- STRIPPING
- NON-MECHANICAL VALVES
- STANDPIPE CALCULATIONS

16:00 J. DILUTE-PHASE PNEUMATIC CONVEYING

- VERTICAL & HORIZONTAL FLOW
- PHASE DIAGRAMS
- PRESSURE DROP CALCULATIONS
- CALCULATION OF CHOKING, SALTATION

17:00 ADJOURN

FRIDAY, APRIL 13TH 2018

08:30 J. DILUTE-PHASE PNEUMATIC CONVEYING (CONTINUED)

- SLIP VELOCITIES
- FAST FLUIDIZATION, CIRCULATING FLUIDIZED BEDS
- BENDS
- EFFECT OF DIAMETER
- EFFECT OF PRESSURE
- FEEDING CONSIDERATIONS

10:15 BREAK

10:30 K. DENSE-PHASE PNEUMATIC CONVEYING

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

12:00 LUNCH (PROVIDED)

13:00 L1. PARTICLE ATTRITION

- TYPES OF ATTRITION
- ATTRITION TESTING AND MODELING

14:00 L2. MODELING GRANULAR-FLUID SYSTEMS

- TYPES OF MODELS
- COMMON PITFALLS

15:00 BREAK

15:30 L2. MODELING GRANULAR-FLUID SYSTEMS (CONTINUED)

17:00 CONCLUSION OF SEMINAR