



# Supercritical Fluid Technology

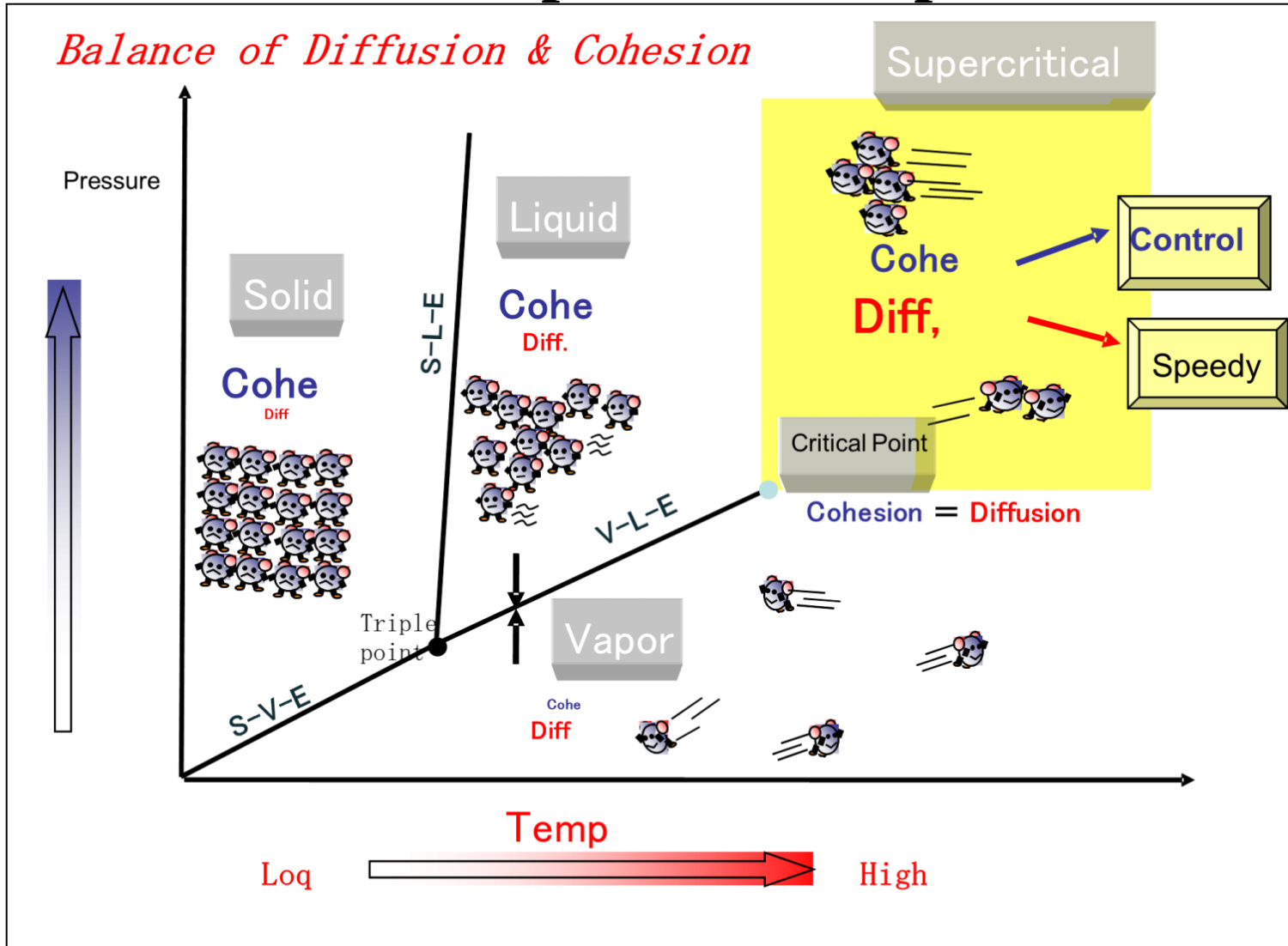
—Cleaning, Functional material preparation—

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# What are Supercritical Fluids?

Non-condensable Fluid above its critical temperature and pressure



# General features of supercritical fluids

- Can vary its density continuously from gas-like to liquid-like values.
- intermediate between gas - liquid

Property	Gas	SCF	Liquid
Density [ $\text{kg/m}^3$ ]	0.6~2	300~900	700~1600
Viscosity [ $10^{-5} \text{ Pa}\cdot\text{s}$ ]	1~3	1~9	100~300
Diffusivity [ $10^{-9} \text{ m}^2/\text{s}$ ]	1000~4000	20~700	0.2~2
Kinematic Viscosity [ $10^{-7} \text{ m}^2/\text{s}$ ]	100	1~10	10

+ *very low surface tension*

# Research Topics on going in Our Group

## 1: Supercritical Cleaning

Clothes, Precise Metal parts & Filters

## 2: Catalyst Preparation

3: Polymer Processing (Foaming, Painting)

4: Extraction of Natural Plants

(Citrus Peels, Leaves, Seeds, Algae, etc... )

5: Heavy Oil Conversion

6: Chemical recycle of Polycarbonate (PC)

7: Energy conversion of wet biomass

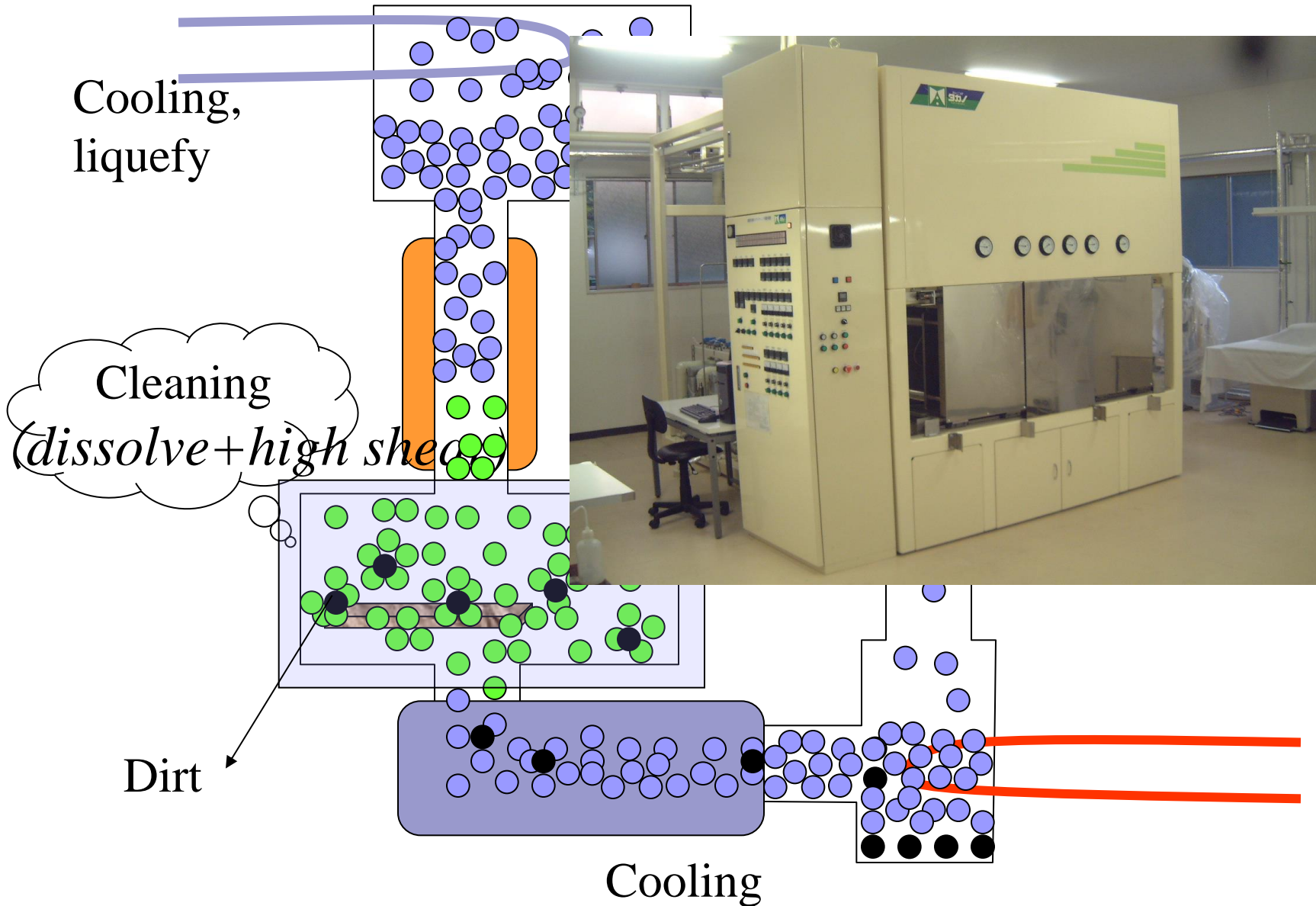
8: P-V-T and Viscosity measurement

9: High pressure phase equilibrium

10: Solution structure in High Temperature Water

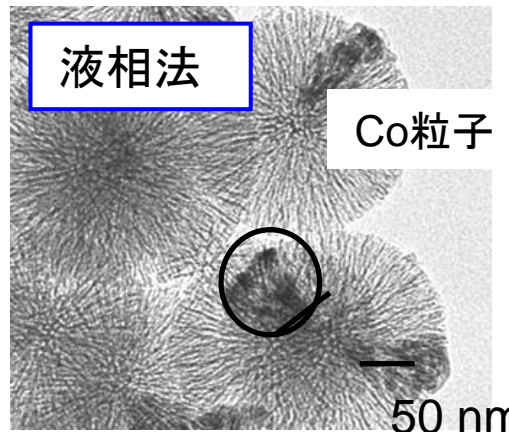
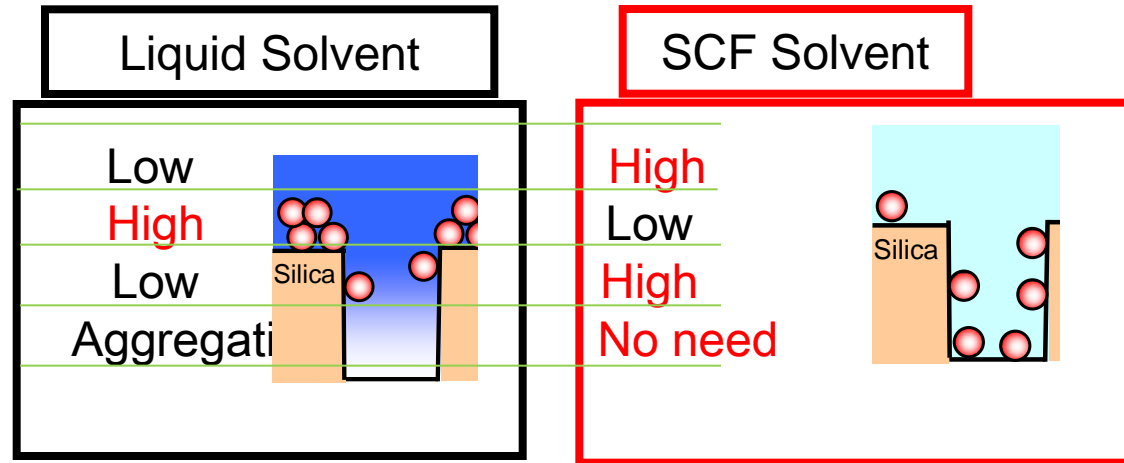
# Supercritical CO<sub>2</sub> dry cleaning

- *Pump-less Solvent Circulation Method* -

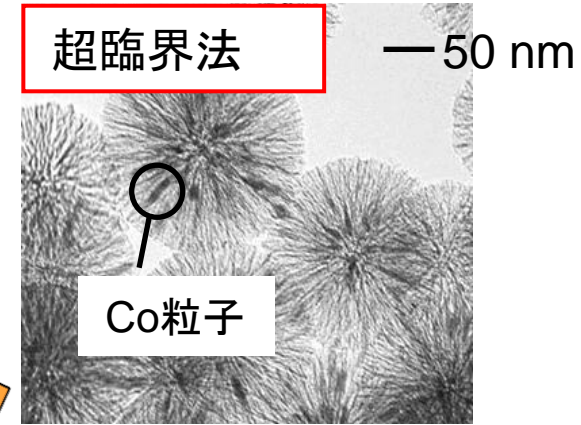


# Catalyst Preparation by Supercritical Fluid

Diffusion  
Surface tension  
Penetration  
Drying



High dispersion  
of metal particles



Efficient Utilization of micro pores

High Penetration Capability

Particles Aggregation Control during Drying Process