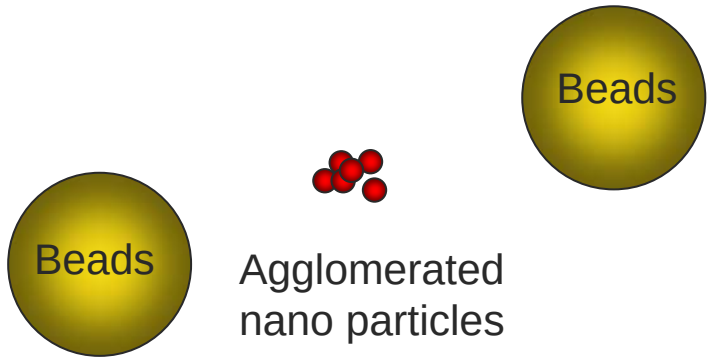
New Dispersing Wet Mill

DUAL APEX MILL



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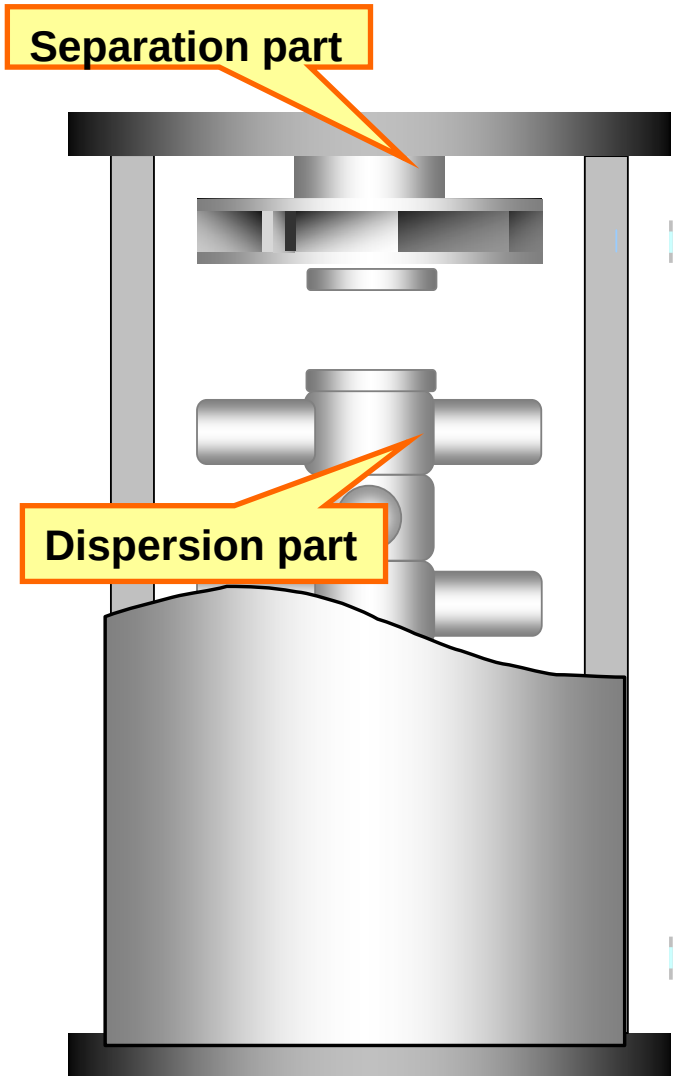
DAM1

Structure



Sectional View

Separation and Dispersion: Independent Drive

- More Flexible Rotor Speed Adjustment
- More Efficient Beads Separation

More Flexibility in Dispersion Process!!

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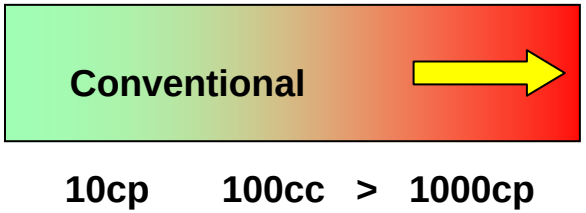
Features

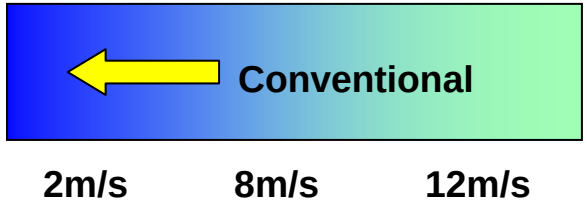
1, High viscosity material can be processed.

100cp → > 1000cp



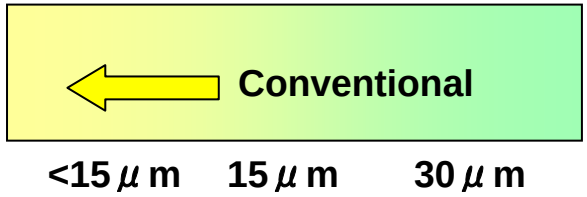
2, Lower rotor speed available

2m/s ← 8m/s



3, Super small beads usable

Under 15 μm ← 15 μm



→ Reduction of the crystal destruction
(For the weak structure materials)
i.e.) A single nano-particle / Medicines / Bio system

→ Reduction of the chipping and flattening

→ Restrain the viscosity increases

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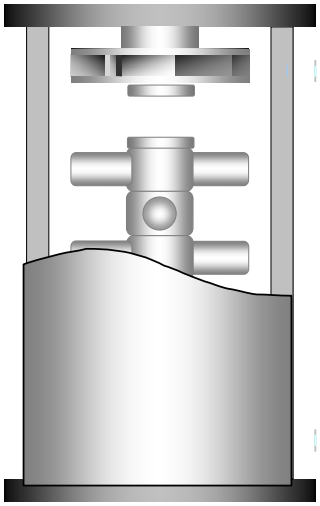
Bead Separation effect

DAM



Dispersed slurry

Titanium Oxide/Water

Slurry viscosity: 1,000cp

Beads

Φ0.015mm(ZrO2)

Running Condition

Dispersion part speed: 3m/s

Separation part speed: 12m/s

Slurry flux: 30L/hr

Conventional mill

・Smaller beads

・Low speed

Risk of beads contamination in slurry

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Influence of crystalline

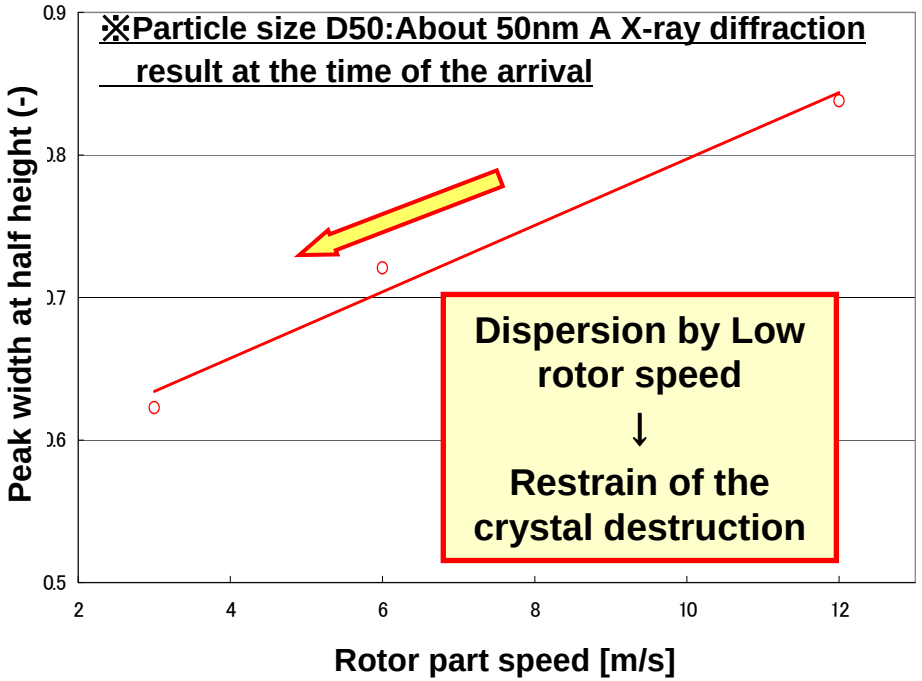
Slurry

TiO2(Primary particle size 15nm)/water base
Slurry density: 10wt%　Viscosity: 5cp

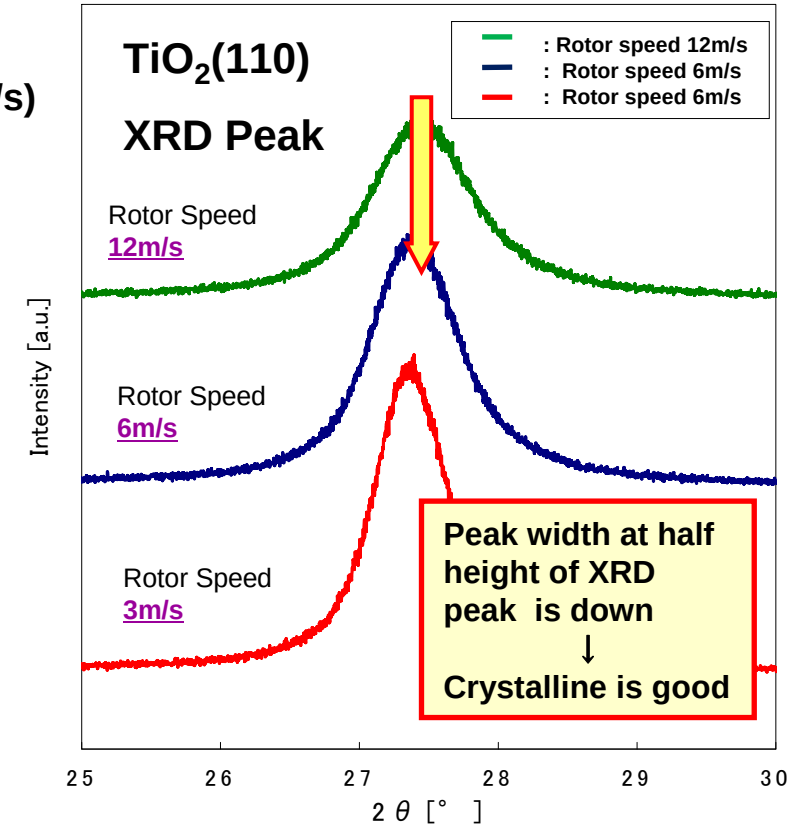
Dispersion condition

ϕ0.05mm ZrO_2 Beads
Rotor speed: 3, 6, 12 m/s　(Separator part speed: 12m/s)
Slurry supply speed: 30L/hr

Relation of Half value width and Rotor part speed



Crystalline by each rotor speed



Extremely beads mill dispersion with a little damage to the crystal was enabled

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Comparison between UAM and DAM

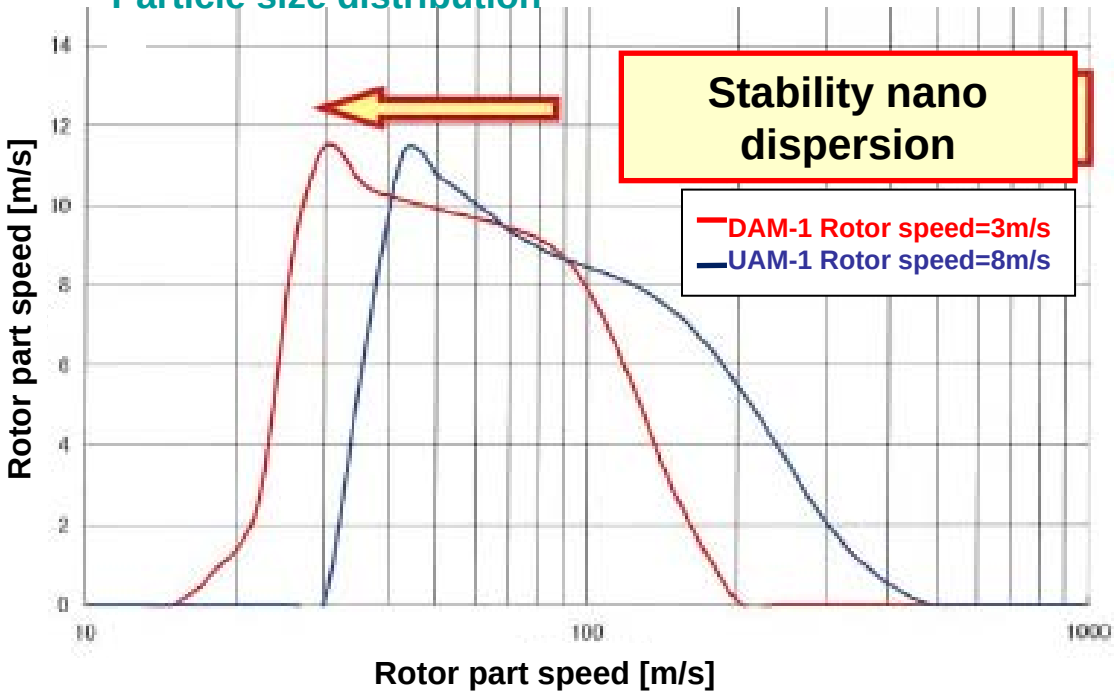
Slurry

TiO2(Primary particle size 15m)/water base
Slurry density: 10wt% Viscosity: 5cp

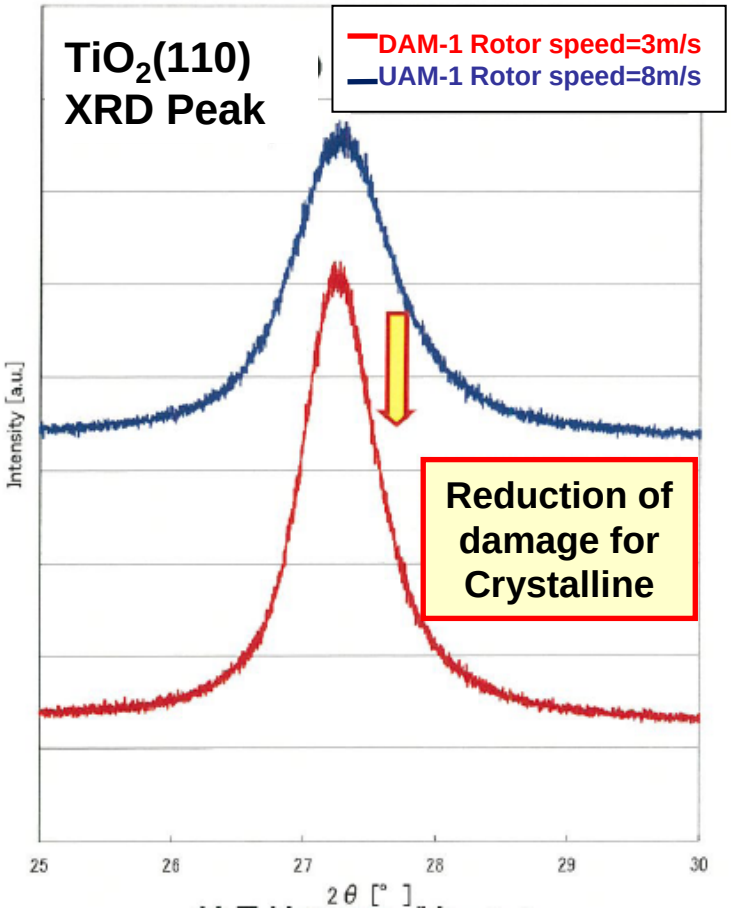
Dispersion condition

DAM-1 ϕ0.1mm ZrO2 beads, Rotor speed=3m/s
UAM-1 ϕ0.1mm ZrO2 beads, Rotor speed=8m/s

Particle size distribution



Crystalline (XRD Pattern)



For nano dispersion, DAM is more stability and less damage of crystal than UAM.

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Thank you very much