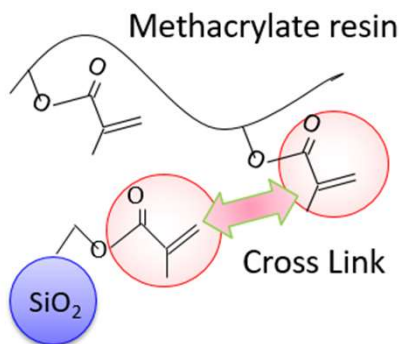
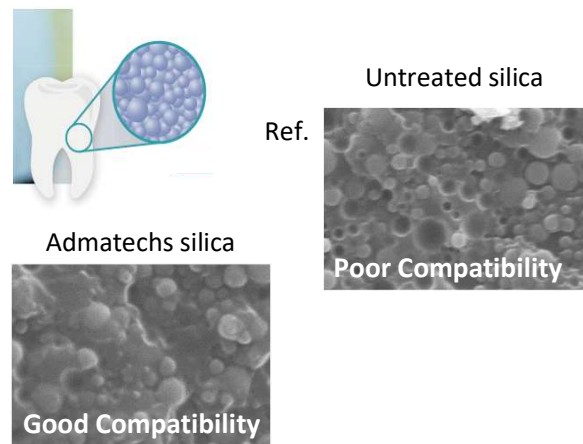


1. Features of Admafine/Admanano Silica

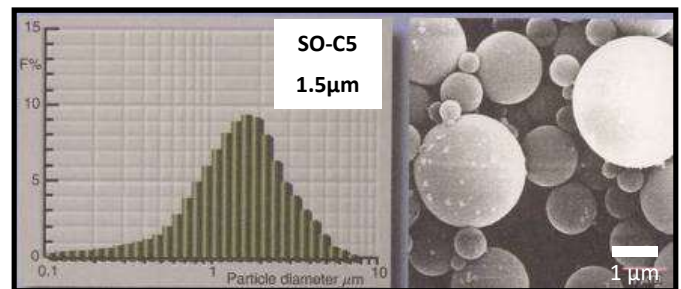
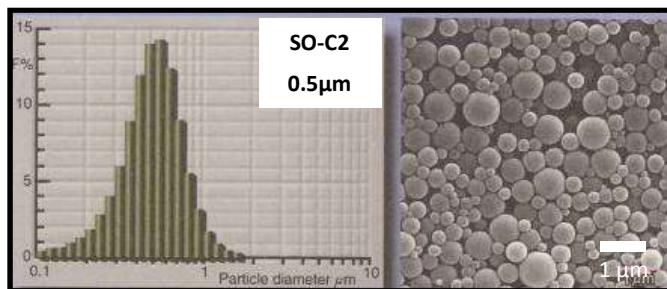
- Uniformly Surface Treated Submicron/Nano Spherical Silica.
- No Agglomeration, Uniform Dispersion in Photo Reactive Methacrylate Resin.
- Low Viscosity & Good Settling Resistance @ High Silica Loading Levels.
- Improvement of Physical Properties. (Flexure Strength, Modulus, etc.)
- Admanano has Good Esthetics.



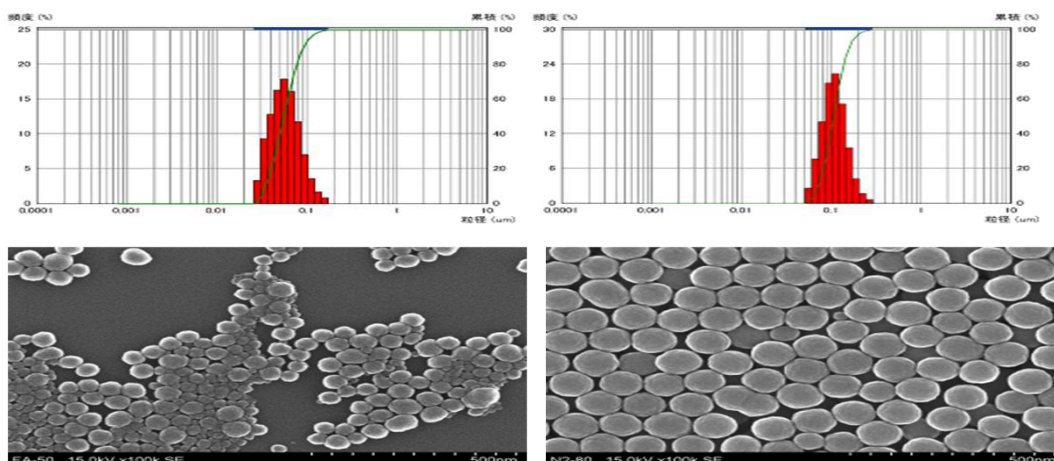
- Methacryl Treated Silica



2. Admafine Silica PSD and SEM Images



3. Admanano Silica PSD and SEM Images

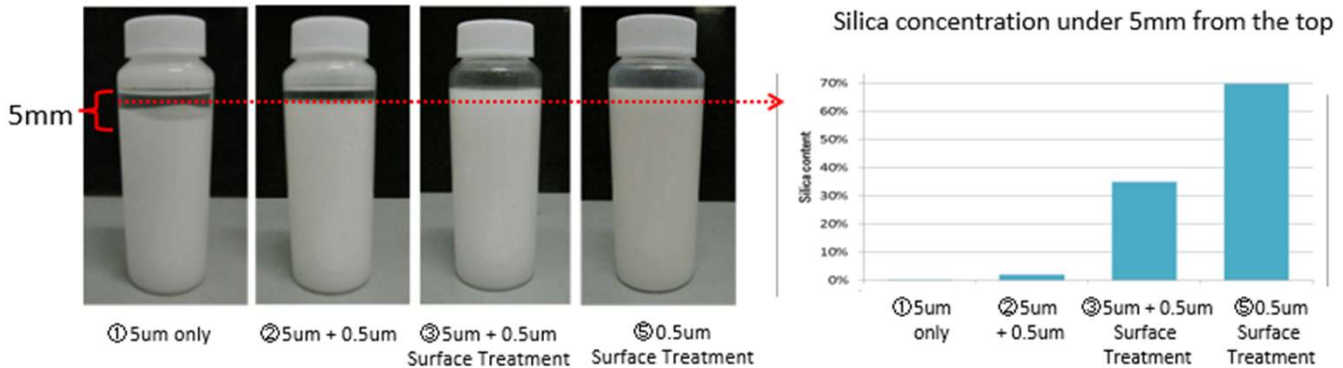


4. Good Settling Resistance for 3DP.

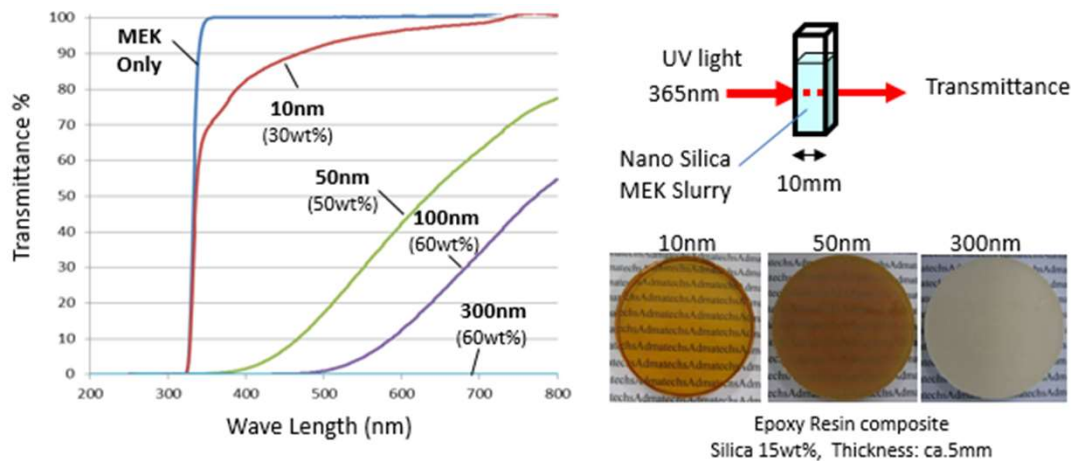
Confidential

• Procedure/Results

- Silica (70wt%) + MMA (30wt%) was dispersed using ultra sonic wave.
- The MMA dispersions were put into vessels, then keep them for 12hrs.
- 0.5 μ m had no settling down.



5. Transparency vs. Particle Size



6. Physical Property Metrics - Admafine Silica for Standard Acrylic Resin

Note	Surface Treatment	Loading Ratio	Flexural Strength	Flexural Modulus	Tensile Strength	Tensile Modulus	Tensile Elongation	Impact Strength
			MPa	GPa	MPa	GPa	%	kJ/m ²
	Neat Resin	0%	25	0.6	19	0.9	6.5	2.3
	No Treatment	30%	46	1.8	32	1.7	5.4	2.6
	Phenyl	30%	48	1.6	33	1.7	7.3	2.7
++	Methacryl	30%	58	2.1	37	1.9	7.2	2.3
+	Vinyl	30%	57	1.8	37	1.6	8.7	2.2

Samples Resin : Urethane Acrylic resin, Silica : 0.5 μ m + surface treatment, Hardener: Radical polymerization initiator
3DPrinting • Curing : DLP type 3D Printer "ML-100" made by MUTOH INDUSTRIES LTD.

Improvement can be seen across all Physical Properties by adding Methacrylic Treated Admafine Silica.