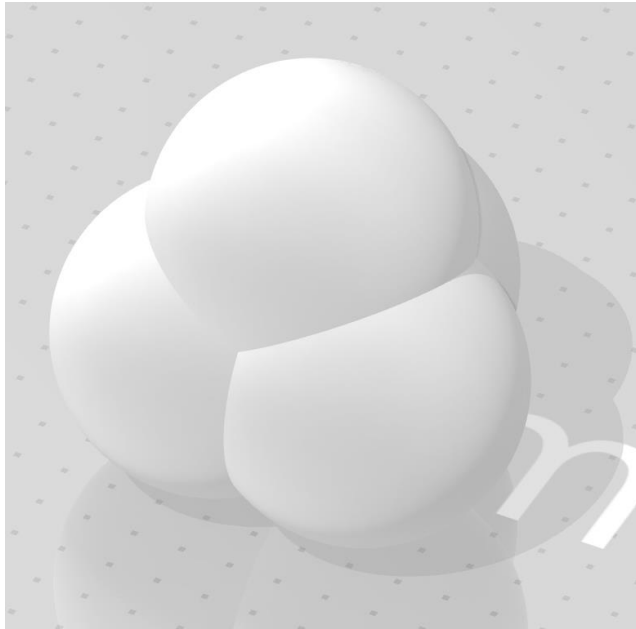


Confirmation of dimension for tetrahedral particle

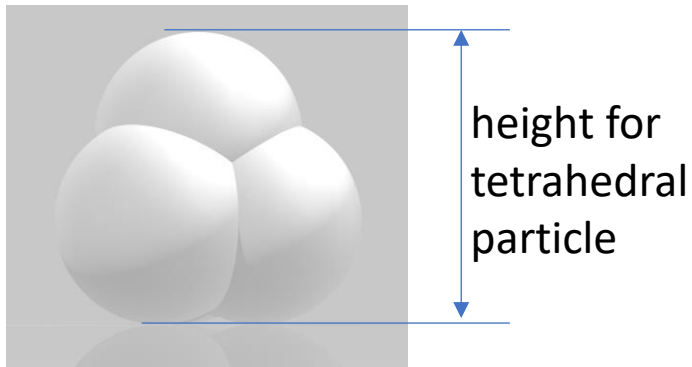


Design for tetrahedral particle

Each clump is made up of four spheres that have the same diameter of 6.2020mm. The four sphere centers are placed at the vertices of a tetrahedron and so the particles can be called tetrahedral particles. The clumps were generated by a 3D printer. The circumsphere that acts as an envelope to the clump is 10 mm (1 cm) in diameter.

Height of designed particle

The height is 8.73mm.



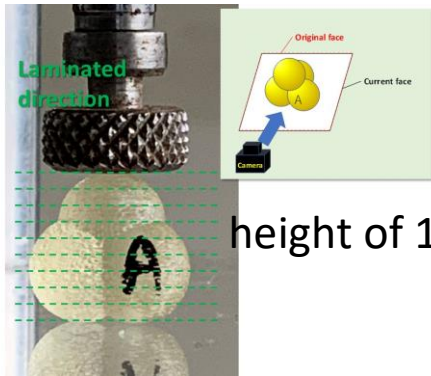
Particles generated by 3D printer

As a matter of course, whether the particle size is as designed depends on the accuracy of 3D printer. So we thought it was necessary to check the dimensions of the particles produced. Then we conducted the measurement of height for 10 particles.

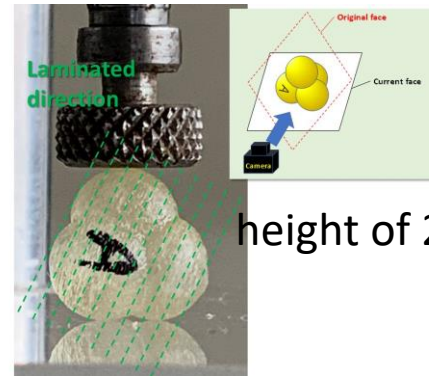
Measurement of heights for tetrahedral particle

We measured four heights of 10 tetrahedral particles as shown in the pictures. The height of 1 was 8.68mm on average. So, 99.43% of particles are generated in 1 direction relative to the design size. In other words, this is equivalent to a sphere having a diameter of 6.16 mm.

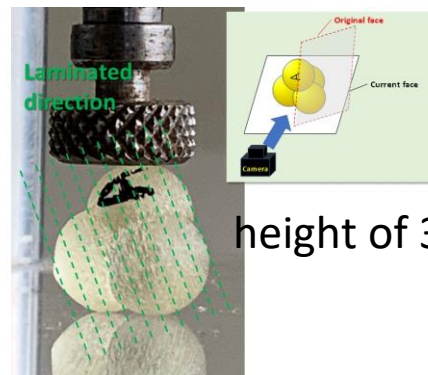
On the other hand, the height of 2, 3, 4 was almost the same, and it was 8.58 mm on average. Thus, 98.28% of the particles are generated in other directions. In other words, this is equivalent to a sphere having a diameter of 6.09 mm.



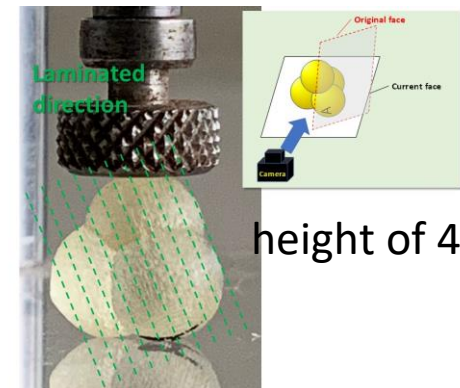
height of 1



height of 2



height of 3



height of 4

Result of Measurement

No.	height (mm)					average	mass (g)
	1	2	3	4			
A	8.65	8.59	8.56	8.57		8.59	0.3538
B	8.66	8.58	8.54	8.57		8.59	0.3533
C	8.65	8.56	8.55	8.57		8.58	0.3539
D	8.65	8.55	8.56	8.58		8.59	0.3525
E	8.68	8.57	8.55	8.58		8.60	0.3538
F	8.66	8.58	8.55	8.57		8.59	0.3535
G	8.66	8.55	8.57	8.55		8.58	0.3518
H	8.66	8.57	8.54	8.55		8.58	0.3525
I	8.68	8.57	8.55	8.56		8.59	0.3537
J	8.67	8.55	8.57	8.55		8.59	0.3534
K	8.66	8.53	8.57	8.56		8.58	0.3515
average	8.66	8.56	8.56	8.56		8.59	0.3531
minimum	8.65	8.53	8.54	8.55			0.3515
maximum	8.68	8.59	8.57	8.58			0.3539
Max-Min	0.03	0.06	0.03	0.03			0.0024