Troubleshooting

Step	Problem	Possible reason	Solution
1b	Broad particle size distribution	The reactor is not sufficiently clean	Clean the reactor with organic solvent and completely dry in air
2b	Particle size smaller than expected	Loss of trisilane during reactor loading	Load and seal reactor fast
2b & 2c	Aggregated particles	Low pressure and loss of solvent	Slightly increase n-hexane volume; Load and seal reactor fast; start the reaction within an hour after loading the chemicals
3b	Takes a very long time (> 3 min) for the temperature to stabilize;	Poor contact to the thermocouples	Prevent moving the thermocouple while placing the reactor into heating block
5c	The colloids have low refractive index and the observed color is grey not black.	Vacuum is low during the annealing and the particle is oxidized.	Make higher vacuum during the annealing process.
5d	The obtained particle is not spherical after annealing.	Annealing temperature is too high.	In our case, 600 ^{o}C is around the maximum acceptable temperature.