Pros and Cons of Commonly Used NANOPARTICLE DISPERSION Methods

01 Stirring

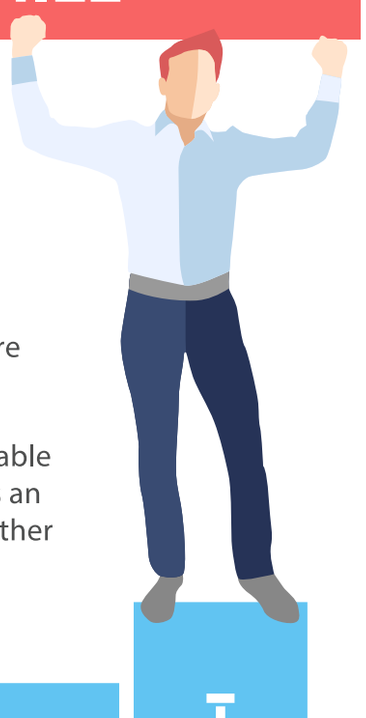
MAGNETIC STIRRER

- Affordable.
- Rarely causes attrition or breaking of nanoparticles.
- Inefficient.
- Rarely disperses the particles evenly and has trouble with deglomeration.
- Cannot prevent particles from aggregating or agglomerating.

LOW SHEAR

02 Homogenizing

THREE ROLL MILL



- Uniform dispersion.
- Will not change nano-particle structure.
- Cooling feature helps control the temperature of the dispersion.
- Consistent and repeatable results. Can be used as an additional step to all other dispersion methods.
- Does not work well with dispersions containing volatile solvents.

HIGH SHEAR

03 Sonication

ULTRASONIC SONICATING BATH

- Affordable.
- Tends to alter the nanoparticle structure.
- There is likely to be an increase in temperature if the dispersion is sonicated for a long time.
- Bath format is less effective than the probe format.
- Unpredictable performance at the lower end of the market.

MEDIUM SHEAR

ULTRASONIC PROBE SONICATION

- Highly efficient.
- Probe tip disintegration can contaminate samples.
- Nanoparticle structure can be altered.
- The temperature of the dispersion will increase even just for a few minutes.
- Unpredictable performance at the lower end of the market.

HIGH SHEAR

04 3 Roll Milling

HIGH PRESSURE HOMOGENIZER

- Highly Efficient.
- Tends to alter the nanoparticle structure.
- Can cause increase in temperature of the dispersion.
- Expensive.

HIGH SHEAR

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