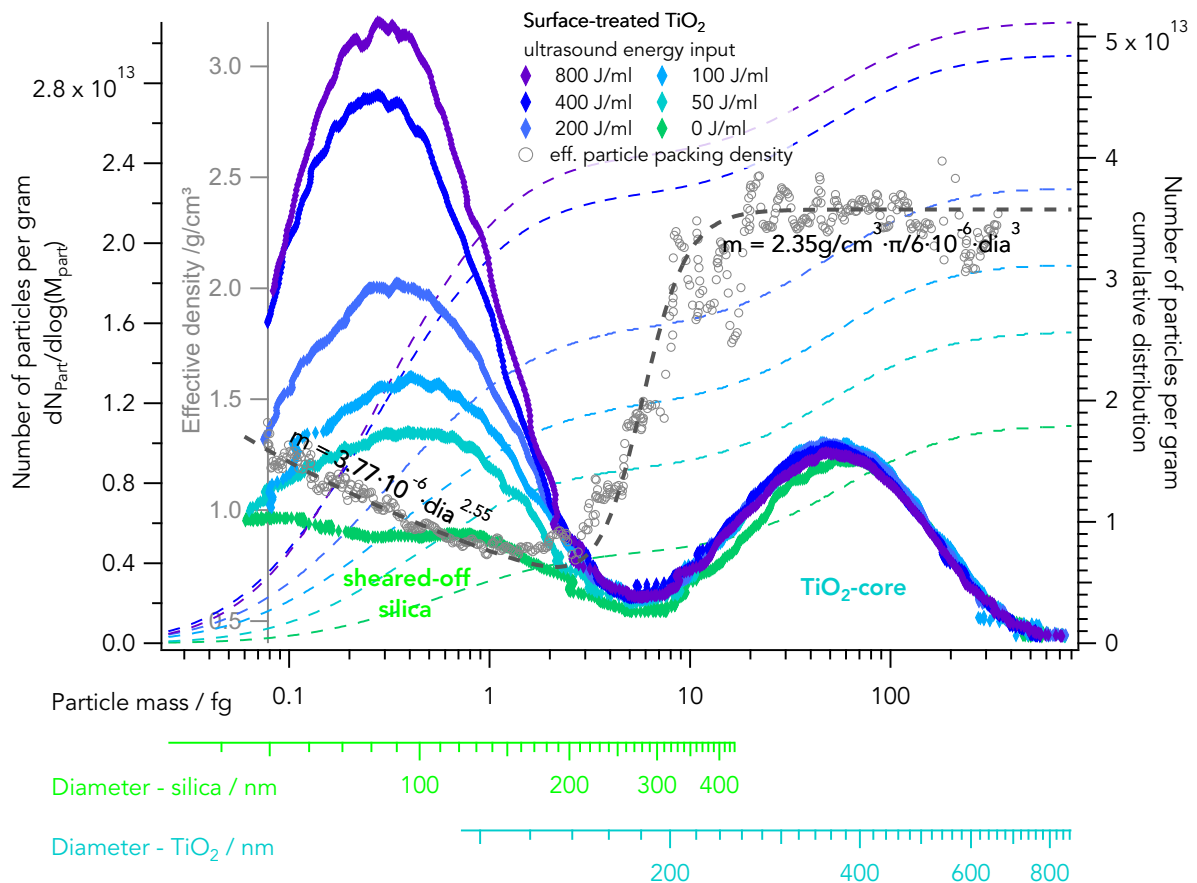
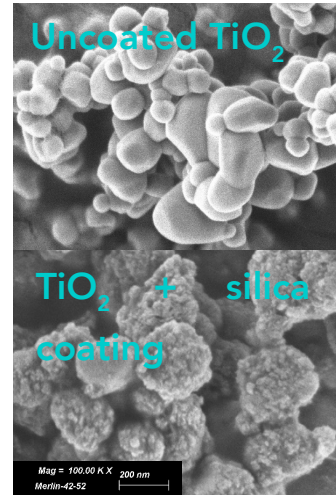
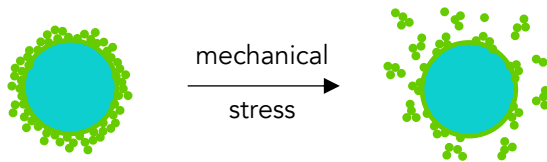


Destruction of core-shell particles

Surface-treated titanium dioxide

Excessive mechanical stress can result in the destruction of encapsulated pigment. Use the PowMaster to follow the delamination of your particles during dispersion. With increasing dispersion energy more of the silica coating is sheared-off from the TiO₂-core particles. The difference in the effective particle density can be used to differentiate between porous silica shell and the dense TiO₂-core.



APPLICATION NOTE

Shearing off silica during dispersion with ultrasound						
Energy input	0 J/ml	50 J/ml	100 J/ml	200 J/ml	400 J/ml	800 J/ml
Particles per gram	$7.6 \cdot 10^{12}$	$1.5 \cdot 10^{13}$	$2.0 \cdot 10^{13}$	$2.6 \cdot 10^{13}$	$3.7 \cdot 10^{13}$	$4.0 \cdot 10^{13}$
Mass-fraction	0.95%	1.31%	1.86%	2.02%	2.15%	2.30%
Degree of delamination	5.3%	7.3%	10.4%	11.2%	12.0%	12.8%
Nanoparticle content						
Number-fraction	18 %	30 %	37 %	43 %	52%	54%
Nanoparticles per gram pigment	$3.4 \cdot 10^{12}$	$7.8 \cdot 10^{12}$	$1.2 \cdot 10^{13}$	$1.6 \cdot 10^{13}$	$2.5 \cdot 10^{13}$	$2.7 \cdot 10^{13}$