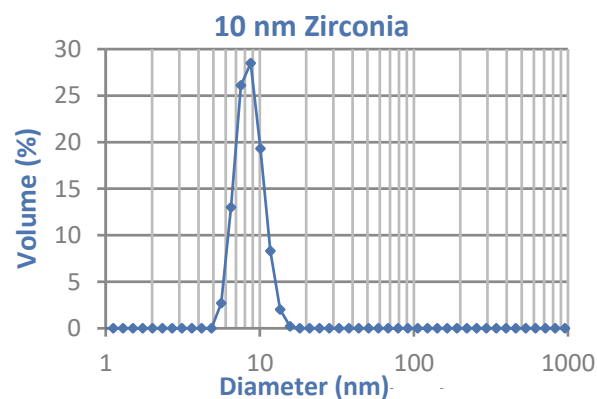
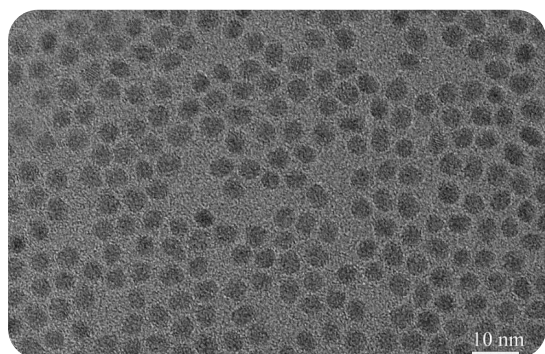
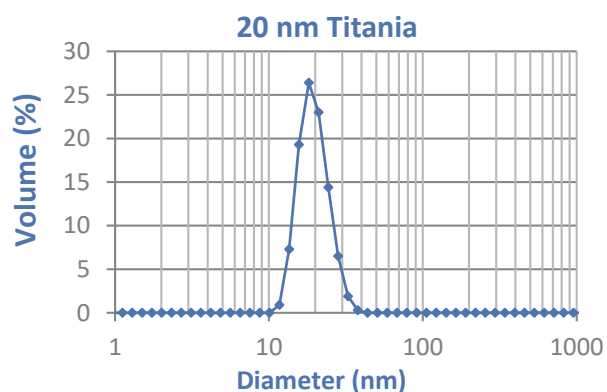
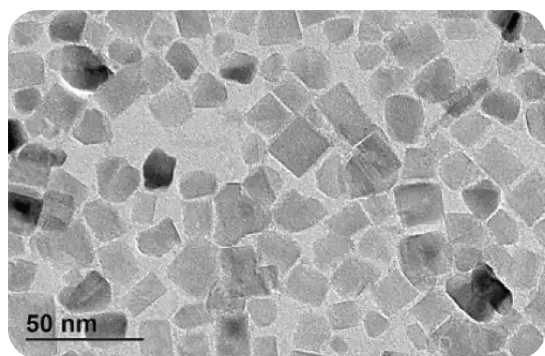
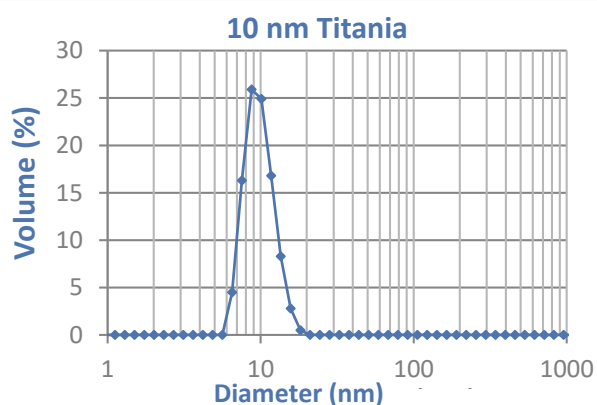
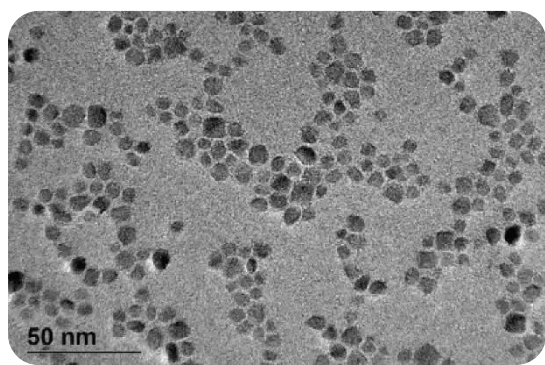


# PixClear<sup>®</sup> Zirconia and Titania Nanocrystal Dispersions

Pixelligent offers standard and customized Zirconia ( $ZrO_2$ ) and Titania ( $TiO_2$ ) nanocrystal dispersions using our PixClearProcess<sup>®</sup> services for prototype products, optimizing their surface chemistry and allowing seamless incorporation into various low-and-high boiling point solvents, monomers, and substrates to deliver revolutionary optical and mechanical properties when formulated. Pixelligent's dispersions are compatible and crosslinkable with various acrylic UV-curable resin systems and can increase refractive index of base resins while maintaining low haze and high transparency. These materials can be used in optical and specialty coatings developed for applications including extended reality displays and optical sensors.

## TEM and DLS Curves



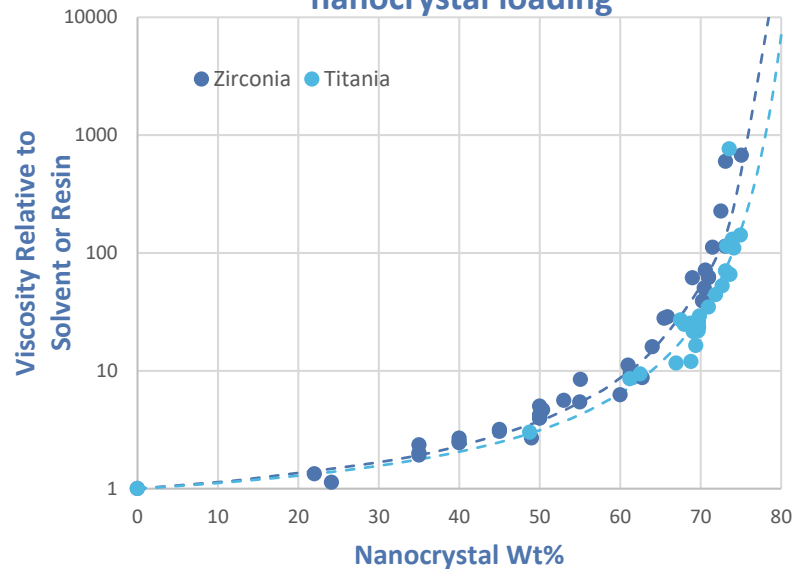
| Parameter                 | TiO <sub>2</sub> (Small)         | TiO <sub>2</sub> (Large)         | ZrO <sub>2</sub>                 |
|---------------------------|----------------------------------|----------------------------------|----------------------------------|
| Nanocrystal Size (TEM)    | 5 nm                             | 15 nm                            | 5 nm                             |
| Nanocrystal Size (DLS)*   | 10 nm                            | 20 nm                            | 10 nm                            |
| Particle Size Dv(99.99)   | < 40 nm                          | < 70 nm                          | < 30 nm                          |
| Crystal Phase (XRD)       | Tetragonal                       | Tetragonal                       | Cubic                            |
| Capping                   | Crosslinkable and Non-functional | Crosslinkable and Non-functional | Crosslinkable and Non-functional |
| Standard Solvents         | ETA, PGMEA                       | ETA, PGMEA                       | ETA, PGMEA                       |
| Appearance of Dispersions | Clear Yellow                     | Milky                            | Clear                            |
| Shelf-Life                | 6 Months                         | 6 Months                         | 6 Months                         |

\*Includes capping

## Guidelines

- » PixClear® nanocrystals enable formulations with film RI (589 nm) as high as 1.75 (ZrO<sub>2</sub>), 1.90 (small TiO<sub>2</sub>) and 2.00 (large TiO<sub>2</sub>)
- » PixClear® ZrO<sub>2</sub> and TiO<sub>2</sub> nanocrystals are available in both high-boiling (Propylene glycol methyl ether acetate) and low-boiling (Ethyl Acetate) solvents. **Other solvents are available upon request.**
- » No aggregation or settling
- » Long shelf life
- » The viscosity of the solution increases with the loading of nanocrystals in solvents and monomers.
- » Customized versions of our Designer Compounds® and Designer Composites® for your next generation extended reality, optical sensors, and specialty coatings applications are available upon request.

## Viscosity dependence of dispersions on nanocrystal loading



PixClear®  
Dispersions

Base  
Formulations

Final  
Formulations



## Company Overview

Pixelligent is an award winning manufacturer of tunable, high refractive index (RI) nanocrystal formulations that enable next-gen electronics, including Extended Reality devices, OLED and MicroLED displays, and sensor applications.

Pixelligent is ISO 9001 certified, has a state-of-the-art manufacturing and laboratory facility located in Baltimore, Maryland. Pixelligent is supported by sales offices in the Republic of Korea and Taiwan.