

Nanoparticles

Examples:

● Stain-repellent [Eddie Bauer Nano-Care™](#) khakis, with surface fibers of 10 to 100 nanometers, uses a process that coats each fiber of fabric with "nano-whiskers." Developed by Nano-Text, a Burlington Industries subsidiary. Dockers also makes khakis, a dress shirt and even a tie treated with what they call "Stain Defender", another example of the same nanoscale cloth treatment.

Impact: Dry cleaners, detergent and stain-removal makers, carpet and furniture makers, window covering makers See [Nano-Text products](#)

● BASF's annual sales of aqueous polymer dispersion products amount to around \$1.65 billion. All of them contain polymer particles ranging from ten to several hundred nanometers in size. Polymer dispersions are found in exterior paints, coatings and adhesives, or are used in the finishing of paper, textiles and leather. Nanotechnology also has applications in the food sector. Many vitamins and their precursors, such as carotinoids, are insoluble in water. However, when skillfully produced and formulated as nanoparticles, these substances can easily be mixed with cold water, and their bioavailability in the human body also increases. Many lemonades and fruit juices contain these specially formulated additives, which often also provide an attractive color. In the cosmetics sector, BASF has for several years been among the leading suppliers of UV absorbers based on nanoparticulate zinc oxide. Incorporated in sun creams, the small particles filter the high-energy radiation out of sunlight. Because of their tiny size, they remain invisible to the naked eye and so the cream is transparent on the skin. From [Nanotechnology at BASF](#)

● Sunscreens are utilizing nanoparticles that are extremely effective at absorbing light, especially in the ultra-violet (UV) range. Due to the particle size, they spread more easily, cover better, and save money since you use less. And they are transparent, unlike traditional screens which are white. These sunscreens are so successful that by 2001 they had captured 60% of the Australian sunscreen market.

Impact: Makers of sunscreen have to convert to using nanoparticles. And other product manufactures, like packaging makers, will find ways to incorporate them into packages to reduce UV exposure and subsequent spoilage. The \$480B packaging and \$300B plastics industries will be directly effected. See [Big Opportunities for Small Particles](#)

● Using aluminum nanoparticles, [Argonide](#) has created rocket propellants that burn at double the rate. They also produce copper nanoparticles that are incorporated into automotive lubricant to reduce engine wear.

● [AngstroMedica](#) has produced a nanoparticulate-based synthetic bone. "Human bone is made of a calcium and phosphate composite called Hydroxyapatite. By manipulation calcium and phosphate at the molecular level, we have created a patented material that is identical in structure and composition to natural bone. This novel synthetic bone can be used in areas where natural bone is damaged or removed, such as in the in the treatment of fractures and soft tissue injuries."

See this [Kemco International](#) page for a list of applications for nanoparticles.