



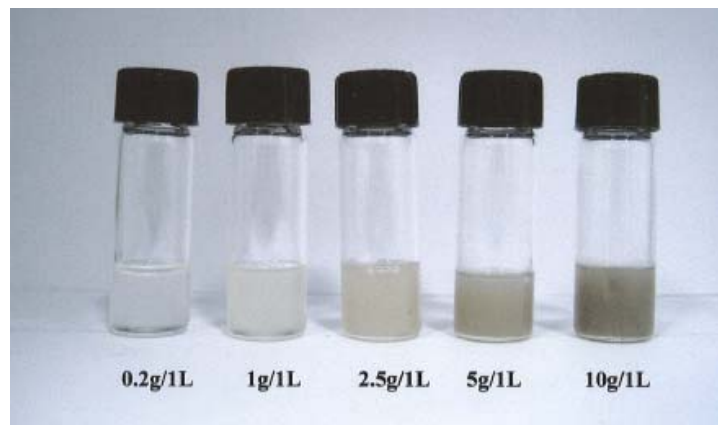
Technology Brief K2135: Deaggregated Nanodiamond

Technology Description

Nanodiamond Inc's key technology is a manufacturing process to create deaggregated ND particles in kg-scale volume. The NDC process uses sono-chemistry to break up the interparticle chemical bonds which results in stable deaggregated NDs. NDI's deaggregated ND particles are available in powder form or in a broad range of liquids. NDI is able to control the diameter of the ND particles and can deliver particles ranging from 5nm to 60nm in diameter.

Advantages

- Mass production capability M
- High dispersibility, up to 15% (on a weight basis) in any solvent or polymer H
- Stable as single particles without aggregation for a long time S
- 5 nm to 60 nm particle diameters in a controlled distribution 5
- Easily used as raw material for further surface functionalization which may lead to enabling various properties such as anti-oxidation, fluorescence, phase-behavior in polymer matrices E



The Market

Preparation of deaggregated 5 nm ND has long been the essential target in worldwide ND industry. There ND market has broad market potential including: paints, coatings, food, cosmetics, medical, polymers and green energy. Examples include:



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- The automotive industry is interested in NDC's technology for fuel saving tires and lubricants. T
- Steel users/companies want to use NDCs technology as a protective coating for steel to prevent rust/corrosion. S
- NDC's technology also has excellent potential as nanofiller for plastics and fuel cell membranes. N

IP

NDI has one patent which has been registered in Korea as well as a broadly filed PCT patent. These patents considered to be fundamental for the manufacturing of deaggregated nanodiamonds.

Nanodiamond Inc.

Nanodiamond Inc. (NDI) was established in 2006 and currently has five employees. Key employees at NDI are Dr. Jongwan Yu (CTO) and Dr. Jongsoon Park. Dr. Yu received his PhD in chemistry at The University of Texas at Austin in 1993. He has worked in various academic and industrial fields since 1982 including working as a research fellow in Seoul National University from 1997 to 2000. Dr. Park received his PhD in chemical engineering from Kunkook University in 2009. Dr. Park has worked in various academic and industrial fields since 1984 as a nano-scientist.

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