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sp3 Diamond Technologies Launches Tunable Diamond Coatings for Wear Surfaces

Company deposits CVD diamond coatings ranging from super smooth to controlled roughness on customer parts; offers deposition tool for manufacturers' internal use

SANTA CLARA, Calif. — July 14, 2009—sp3 Diamond Technologies, Inc., (www.sp3diamondtech.com) a leading supplier of diamond film products, equipment and services, today announced that its chemical vapor deposition (CVD) deposition capability has been expanded to provide diamond coatings ranging from super smooth nanocrystalline with a surface roughness of less than 10 nm to controlled microcrystalline films with a surface roughness greater than 10 um. Additionally, sp3's Model 650 CVD diamond hot filament reactors, which are used to apply the coatings, are available for companies interested in manufacturing diamond coated products in-house.

sp3's super smooth diamond is ideal for wear surfaces such as seals or bearings, while the microcrystalline films are highly suited for applications such as chemical mechanical planarization (CMP) pad conditioning. Both types of CVD diamond films provide an excellent coating for harsh or demanding environments where the hardness of diamond, its extremely low coefficient of friction, its abrasion resistance and its excellent thermal properties surpass all other alternatives.

"sp3 has a unique offering in this market because we manufacture the CVD diamond deposition reactors required for these applications," said Dwain Aidala, president and COO of sp3 Diamond Technologies. "This allows customers to take advantage of our coating services, or to purchase a reactor system and add super smooth or controlled roughness diamond coatings as a process step within their own facility. The expertise that we deliver with a reactor means that customers typically receive existing process recipes that enable them to achieve the CVD diamond film characteristics required for their target application."

Super smooth diamond, as manufactured on sp3's CVD diamond reactors, is an ideal material for a wide variety of wear surfaces with demanding materials requirements, such as contacting and non-contacting coated seals and water systems.

Controlled roughness diamond is an emerging material for CMP pad conditioners as the silicon wafer industry moves to 22 nm and lower geometries in a highly caustic copper (Cu) and tungsten (W) slurry environment.

Diamond-coated surfaces are better able to withstand the harsh chemical environments typical for both types of applications, whether it is abrasive pumping or hot water, where lubrication is poor, or in the corrosive slurry environment of Cu or W CMP. In these environments, diamond's hardness and chemical resistance combine to significantly extend the useful part life.

The ability to precisely control diamond growth and film properties in the sp3 CVD diamond deposition process enables a very controlled grain size and orientation on a substrate such as silicon carbide (SiC), thus lowering the amount of heat generated between sliding surfaces, and further extending part life while reducing failures. Such films can also be deposited on a wide variety of other substrates, including cemented carbide, silicon, tungsten carbide, and graphite.

sp3 Diamond Technologies, Inc.

sp3 Diamond Technologies is focused on providing diamond-based solutions for electronics thermal management, diamond-on-silicon applications, and enhanced cutting surfaces. Based in Santa Clara, California, USA, the company provides diamond products for thermal and cutting applications, diamond deposition services, hot filament CVD reactors, and deposition consulting services to companies worldwide across a broad spectrum of industries.

sp3 Diamond Technologies is a subsidiary of sp3 Inc., a full service provider of products and services relating to thin-film and thick-film diamond deposition and other diamond materials. For more information about the company and its products and services please visit www.sp3diamondtech.com.