SICON NANOCOMPOSITE DIELECTRIC THIN FILM

SiCON is a nanocomposite thin film consisting of silicon dioxide, silicon carbide, and carbon nitride nanostructures deposited by plasma-enhanced chemical vapor deposition. SiCON harnesses the beneficial characteristics of silicon dioxide and silicon carbide by employing nanotechnology and materials science to combine these characteristics into a coating that is transparent, high strength, scratch resistant, crack free, and has favorable optical and electrical properties. The coating can be performed at various deposition temperatures from near-ambient to 400°C without sacrificing the beneficial properties. This characteristic provides the ability to coat on many materials including glass, metals, and plastics. Electrical measurements indicate SiCON has excellent insulating properties and a high breakdown strength greater than 5MV/cm. The coating can also be used in extreme environments, such as high temperature and radioactive environments, without significantly altering the properties of SiCON

POTENTIAL AREAS OF APPLICATIONS:

- High energy density capacitors
- Insulating layer for surgical tools, etc.
- Chemical- and etch-resistant coating
- Anti-reflection and anti-scratch coating for screens and lenses
- Coating used in extreme environments like high temperatures or radioactive environments

PATENT STATUS: Provisional or Non provisional patent application on file **INVENTOR(S):** Shubhra Gangopadhyay; Keshab Gangopadhyay; Maruf Hossain **CONTACT INFO:** Wayne McDaniel, Ph.D.; McDanielWC@missouri.edu; 573-884-3302