

### POSS® Polyimide For Space Applications Converted to American Indian Hunting Arrow Preservation

Hattiesburg, MS: Hybrid Plastics has converted a space polymer coating to the conservation of part of America's heritage. POSS® *Imiclear* was developed as a polyimide replacement for space-based solar cell cover glass. Now, similar to the successful conversion of a nanoscopic POSS® enhanced epoxy which assisted in the saving of the Confederate submarine *H.L. Hunley*, Hybrid Plastics has extended the use of this unique sprayable and colorless polyimide coating to preservation of hand-made Native American arrow reproductions.

These reproductions, just as the museum originals, are subject to the ravages of scrapes and scratches, moisture and sun light. The use of POSS® nanotechnology allows these hand-made arrows, complete with their individually flint knapped tips, to retain their natural color and beauty of craftsmanship while offering the latest in high tech protection. The POSS® *Imiclear* is ideally suited for this task as it seals the porosity of the natural materials (flint, wood, feathers and sinew) at a scale not visible to the human eye.

POSS® *Imiclear* is scheduled to be launched in February 2009 for deployment aboard the International Space Station as part of the MISSE 7 (Materials International Space Station Experiment). POSS® *Imiclear* is colorless, sprayable, highly adherent and ultra-water repellent. These qualities in combination with the toughness of polyimide render it ideal as a coating for solar cells, electronic circuits and industrial equipment.



*River-cane arrow shafts and flint tips attached via deer sinew and over coated with POSS® Imiclear.*  
\*Photo Courtesy: Leaf River Sports, 1229 Hwy 42, Petal, MS, Mr. David Gray Manager, Mr. Clay Massey bow mechanic and artist.

POSS® [Polyhedral Oligomeric Silsesquioxanes] is a revolutionary new Nanotechnology based on silicon-derived building blocks that provide nanometer-scale control to dramatically improve the thermal and mechanical properties of traditional polymers while offering easy incorporation using existing manufacturing protocols. These compounds have an average diameter of just 1.5 nanometers, or billionth of a meter. POSS® nanomaterials can be used both as direct replacements for hydrocarbon based materials or as low-density performance additives to traditional plastics. They release no VOCs, and, thereby, produce no odor or air pollution. They are biocompatible, recyclable, non-flammable, and competitively priced with traditional polymer feedstocks. POSS® Nanostructured® materials can be readily incorporated into virtually any existing polymer system through blending, grafting or copolymerization.

These POSS<sup>®</sup> nanobuilding-blocks were hailed by R&D magazine as one of the 100 globally most technologically significant new products for the year 2000. Hybrid Plastics was one of five finalists in Small Times Magazine's *2002 Best of Small Tech Award*. In December 2005, a *Presidential Determination* deemed POSS<sup>®</sup> Nanotechnology to be in the strategic national interest of the United States.

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