Polymer-based coating is self-healing

Researchers at Case Western Reserve University, Cleveland, Ohio; the Adolphe Merkle Institute, University of Fribourg, Switzerland; and the Army Research Laboratory at Aberdeen Proving Ground, Md.; developed a polymer-based material that can heal itself when placed under ultraviolet light for less than a minute. The new materials were created using a mechanism known as supramolecular assembly. Unlike conventional polymers, which consist of long, chain-like molecules with thousands of atoms, these materials are composed of smaller molecules, which are assembled into longer, polymer-like chains using metal ions as “molecular glue.” The result: the new materials, called “metallo-supramolecular polymers,” behave in many ways like normal polymers. But when irradiated with intense ultraviolet light, the assembled structures are temporarily unglued. This transforms the originally solid material into a liquid that flows easily. When the light is switched off, the material re-assembles and solidifies again: the original properties are restored. Tests showed the researchers could repeatedly scratch and heal their materials in the same location. www.cwru.edu; www.unifr.ch; www.army.mil.

DSM and Interfloat sign agreements to market anti-reflective coating technology

DSM Advanced Surfaces, Urmond, the Netherlands, signed license and supply agreements with Interfloat Corp., Liechtenstein, a leading solar-glass producer, for DSM’s KhepriCoat high-transmission/anti-reflective coating technology. This opens the way for Interfloat to start producing cover glass for solar modules coated with KhepriCoat, a record-breaking high-transmission/anti-reflective (AR) coating. A KhepriCoat layer on solar cover glass reduces the amount of sunlight reflected, thereby allowing more of it to pass through to the solar cells. This significantly boosts the sunlight conversion rate of solar modules: the typical daily improvement in module efficiency is in the range of 3-4% for photovoltaic (PV) modules and 6-8% for solar thermal modules. The new coating-technology is the key to reducing the reflection of the solar glass for PV modules from 4% to less than 1% in the relevant wavelength range. This advantage will help module manufacturers make solar electricity more competitive compared with conventional sources. The transfer of know-how and technology and the installation of the coating equipment are expected to be completed by August, when Interfloat will start production. www.dsm.com; www.interfloat.com.

Nonstick coatings provide long life on medical components

Poeton Industries, Gloucester, UK, introduced its new Apticote 810 nonstick coating products, which can extend the life of medical components. Nonstick coatings stop other materials, including aggressive medical products, from adhering to it. The problem is how to get the same coating to key on to the machined component, be it a guide, mold, roller, blade, or plate. The best nonstick coatings are relatively soft, and are easily damaged or peeled off the substrate. Poeton’s Apticote 810 coating combines Poeton’s range of nonstick polymers (Apticote 200) and its advanced Apticote 800 thermal spray capability. By blending the two, with a graded structure from the substrate through to the working surface, the company achieved a robust substrate bond; a tough, high load-carrying capacity coating, and the optimum nonstick properties. The polymer composition can be tailored to the application, while blending it into a ceramic matrix. Apticote 810 coatings are compliant with the Code of Federal Regulations CFR21, covering their use in medical products. www.poetom.co.uk.