faces between different-handed materials regardless of the medium in which the beams are propagating.

ANDY FRANCIS

Layered ZnDS Nanocomposites Formed with Assistance of PLA

Researchers have paid considerable attention recently to the family of layered metal hydroxide materials, such as layered double hydroxides (LDHs), hydroxide double salts (HDSs), and single-metal hydroxides because of their pronounced anion exchange capacity. N. Koshizaki and colleagues from Nanoarchitectonics Research Center, Japan, formed layered zinc hydroxide/dodecyl sulfate (ZnDS) nanocomposites in a special solution environment created by pulsed laser ablation (PLA) of a zinc plate in an aqueous solution of sodium dodecyl sulfate (SDS). As reported in the February 24 issue of *Chemistry of Materials*, the researchers made the preparation of ZnDS a simple process, directly triggered by metal species without any chemical modifications.

Other methods for the synthesis of layered composites—for example, zinc hydroxide salts (LHS-Zn)—are coprecipitation or organo-derivatization reaction methods, but such LHS-Zn composites are generally poorly crystallized and exhibit turbostratic disorder.

In contrast, the researchers obtained a ZnDS composite platelet that presents highly ordered single-crystalline layered structures with well-defined octagonal shapes.

The scientists conducted PLA experiments in deionized water with dilute (0.001 M) and more concentrated (0.1 M) SDS solutions. X-ray diffraction of the resultant ZnDS composite showed the formation of layered structures: ZnDS products with long-range order and with no turbostratic faults revealed in products from either SDS solution and some stacking disorder indicated in products from the 0.1 M SDS solution. Products by PLA of Zn in deionized water revealed typical reflections of wurtzite ZnO, also confirmed by transmission electron microscopy (TEM) observation.

TEM images of products in 0.001 M or 0.01 M SDS solutions revealed numerous lamellar thin platelets with irregular octagonal shapes and an average diameter of 1.5 μm preferentially lying on the grid. Electron diffraction patterns showed that the octagonal platelets were monocrystals lying naturally on the plane with clear hexagonal crystal symmetry.

In the composite formation processes, the researchers produced charged inorganic zinc hydroxide species step-by-step by the strong reaction between the ablated Zn species and the water molecules. The preferred coordination of hydrophilic head groups with zinc coordination sites prevents further reaction from forming ZnO nanoparticles.

The researchers said their simple method of forming layered ZnDS nanocomposites enables the development of new types of hybrid composites by using other applicable metal targets and surfactants.

EKATERINA A. LITVINOVA

Carbon-Nanotube Formation Observed *In Situ*

Due to their magnetic, electronic, and mechanical properties, carbon nanotubes (CNTs) are excellent candidates for a variety of emerging nanotechnology applications. Exploitation of any of these properties requires either the production or the

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