Silane Oxidation Catalyzed by Carbon Nanotube–Gold Nanohybrids

**Results:**

\[ \text{R}^1\text{Si(R}^3\text{H}) + n\text{H}_2\text{O} \xrightarrow{\text{AuCNTs (0.1 mol%), air, THF, r.t., time}} \text{R}^1\text{Si(R}^3\text{OH} + n\text{H}_2 \]

**Significance:** The gold nanohybrid on multiwalled carbon nanotubes 1 (AuCNT nanohybrids) was prepared by layer-by-layer (LBL) assembly of amphiphilic nitrilotriacetic acid diyne lipids (DANTA), cationic poly(diallyldimethylammonium chloride) (PDA-DMAC), and colloidal nanoparticles (AuNPs). The AuCNT-catalyzed aerobic oxidation of silanes (2a–j) was carried out in THF to give the corresponding silanols (3a–j) in 93–99% yields.

**Comment:** The hydrophobic portion of DANTA was adsorbed on the nanotubes and photopolymerized by UV irradiation at 254 nm. Carbon nanotube–gold nanohybrid 1 was characterized by TEM, GC-MS, ICP-MS, and XPS analyses. The catalyst was readily recovered by centrifugation and reused five times without significant loss of catalytic activity.