

Recent Patents

Recent patents issued to Rensselaer researchers:

Low Dielectric Constant Films Derived by Sol-Gel Processing of a Hyperbranched Polycarbosilane

Case #734, Patent #6,809,041, Issue Date 10/26/04

This is a hybrid organic/inorganic organosilicon networked polymer material having a compositional formula $[\text{Si}(\text{O})\text{CH}_2]_n$ and a dielectric constant of less than 2.4. The material may be used as an interlayer dielectric film in a semiconductor device. The film is preferably fabricated by a sol-gel process using an alkoxy substituted hyperbranched polycarbosilane precursor material.

Inventors: Leonard Interrante, Ning Lu

Thyristor Having One or More Doped Layers

Case #558, Patent #6,787,816, Issue Date 9/07/04

This is a method for forming one or more doped layers using ion-implantation in the fabrication of thyristor devices. For example, these thyristors may be made from single crystalline silicon carbide. According to one aspect of the invention, one of the required layers is formed by introducing dopants after crystal growth as opposed to conventional methods which involve doping during crystal growth. Specifically, impurities may be introduced by using the technique of ion implantation.

Inventors: Tatsing Chow, Jeffrey Fedison

Light-Emitting Diode With Planar Omni-Directional Reflector

Case #759, Patent #6,784,462, Issue Date 8/31/04

A high extraction efficiency, light-emitting diode having a reflective submount and methods for forming the LED. A light-emitting region is disposed between a top contact and a conductive holder. The region extends beyond an area underlying the top contact. An omni-directional reflector is disposed between the light-emitting region and the conductive holder. According to one embodiment, the reflector comprises one or more electrically conductive contacts configured to correspond to an area beyond the area underlying the top contact. According to one embodiment, the reflector comprises a dielectric layer having a refractive index of between about 1.10 and 2.25, contacts extending through the reflector, and a reflective conductive film.

Inventor: Fred Schubert

8-carboxamido-2,6-methano-3-benzazocines

Case #629, Patent #6,784,187, Issue Date 8/31/04

8-Substituted-2,6-methano-3-benzazocines of general structure I in which A is $-\text{CH}_2-\text{OH}$, $-\text{CH}_2-\text{NH}_2$, $-\text{NHSOCH}_3$, and Y is O, S or NOH are useful as analgesics, anti-diarrheal agents, anticonvulsants, antitussives and anti-addiction medications. 8-Carboxamides, thiocarboxamides, hydroxyamidines and formamides are preferred.

Inventor: Mark Wentland

Gelatin Nanocomposites

Case #654, Patent #6,783,805, Issue Date 8/31/04

Scratch-resistant nanocomposite materials contain at least one film-forming hydrophilic colloid and at least one ceramic nanoparticle material. In particular, the film-forming hydrophilic colloid may be a gelatin, and the ceramic nanoparticle material may be alumina. In another aspect, the invention relates to scratch-resistant imaging elements comprising a support and a layer comprising such a nanocomposite material. The nanocomposite layer may be employed as an imaging layer, or as a protective layer disposed between an imaging layer and the environment.

Inventors: Tao Li, Linda Schadler, Richard Siegel, John Mendel, Glen Irvin



Ultrafast All-Optical Switch Using Carbon Nanotube Polymer Composites

Case #644, Patent #6,782,154, Issue Date 8/24/04

An ultrafast all-optical nonlinear switch. The switch has as components a substrate and a material disposed on the substrate. In one embodiment, the material includes a plurality of single-walled carbon nanotubes and a polymer forming a composite. Preferably, the polymer is polyimide. In another embodiment, the material includes a plurality of single-walled carbon nanotubes incorporated into a silica. The nanotube loading in the material is less than about 0.1 wt %. The material is a substantially transparent, third-order nonlinear optical material. The switch has a switching speed of less than 1 picosecond for light with a wavelength of about 1.55 micrometers. Also disclosed is a process for preparing the ultrafast all-optical nonlinear switch.

Inventors: Pulickel Ajayan, Yuchuan Chen, Toh-Ming Lu, Nachiket Raravikar, Linda Schadler, Gwo-Ching Wang, Xi-Cheng Zhang, Yiping Zhao

Transition Metal-Based Superoxides As Novel Heterogeneous Initiators For Free Radical Polymerizations

Case #603, Patent #6,765,076, Issue Date 7/20/04

Transition metal superoxides of formula $M(O_2)_n$, where M is a transition metal and n is equal to the valence of M, may be used as initiators for free radical polymerization, optionally, under conditions of living polymerization, with or without chain transfer agents. Polymers produced have a narrow molecular weight distribution and low polydispersity indexes when chain transfer agents and/or molecular weight controlling agents are used.

Inventors: Brian Benicewicz, Subbareddy Kanagasabapathy, Arumugam Sudalai

Activators of Endothelial Nitric Oxide Synthase

Case #645, Patent #6,750,197, Issue Date 6/15/04

Researchers have identified regulatory agents for the nitric oxide synthase (NOS) enzyme family. The NOS enzyme family, responsible for the production of nitric oxide (NO), has long been recognized as an attractive target to treat a variety of therapeutic indications including hypertension, diabetes and toxic shock syndrome. The invention identifies peptide(s) of constitutive nitric oxide synthase (NOS) enzymes as an intrinsic polypeptide insert in the flavin mononucleotide (FMN) binding domain of endothelial NOS. As a result of this discovery, methods are now available for isolating and/or identifying an entirely new class of NOS isoform-specific inhibitors or activators.

Inventor: John Salerno

