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Safe, Biocompatible Nanomaterials for Multiphoton Imaging (07-034)

Carbon nanomaterials exhibit strong multiphoton luminescence emissions for use in biological imaging

Market Overview

These biocompatible carbon nanomaterials exhibit luminescence, making them excellent for multiphoton imaging of cells, spores, tissues, and organs *in vitro* and *in vivo*. The global microscopy market is expected to continue growing, and is projected to reach $5.8 billion by 2019. In recent years, multiphoton imaging has been favored over traditional ultraviolet (UV) light techniques for their safer and more accurate approach to biological imaging. However, current multiphoton imaging practices use luminescent materials which are not biologically compatible, creating the need for safer materials in the field. Clemson University researchers have developed carbon nanomaterials which exhibit strong multiphoton luminescence emissions and use biologically compatible materials that can be safely expelled from the body. These materials can be used as agents for multiphoton luminescence imaging of biological systems both *in vitro* and *in vivo*.

Application

Biomedical imaging

Stage of Development

Proof-of-concept

Advantages

- Uses biologically compatible materials, increasing safety of multiphoton luminescence imaging
- Allows for imaging of biological systems *in vitro* and *in vivo*, allowing wider applicability in the field of biological imaging

Technical Summary

These materials can exhibit excellent response during use and can be formed completely of biologically compatible materials. The materials include a nanoparticle or a nanotube of carbon and a passivation agent bound to the surface of the nanoparticle or nanotube. The passivation agent can be, for instance, a polymeric material or derivatized for particular applications. The materials exhibit strong luminescence with multi-photon excitation in the near infrared. These materials are particularly well suited to biomedical imaging processes as they can provide benign alternatives to less ecologically and/or biologically friendly materials, such as those based upon heavy metal semiconductors. These materials can be used as agents for multi-photon luminescence imaging of cells, spores, tissues, organs and other biological systems *in vitro* and *in vivo*.

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App Type	Country	Serial No.	Patent No.	CURF Ref. Number	Inventors
Utility	United States	12/668,212	NA	07-034	Ya-Ping Sun

About the Inventor

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For More Information

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