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Preparation of Super-Stable Gold Nanorods via Encapsulation into Block Copolymer Micelles

A scalable, self-assembly process stabilizes gold nanorods for indefinite periods, enabling their use as reliable imaging agents and cancer treatments under physiological conditions, and can be extended to other nanoparticle agents.

Gold nanorods (GNR) have potential uses as imaging agents or in cancer treatments because of their ability to be tuned to absorb or scatter various types of light. Gold particles could be injected into the body near a tumor and then heated with a light source to selectively kill the cancer cells. Unfortunately, current fabrication techniques create GNRs that are cytotoxic and breakdown quickly in a saline solution.

To address this, researchers at Purdue University have developed a self-assembly process that encapsulates GNRs into block copolymer micelles. The resultant GNRs are stable against aggregation, even under physiological salt conditions, for indefinite periods of time. This method can be scaled up for mass production and can easily be extended to encapsulate and stabilize other nanoparticle agents.

Advantages:

-Stable for indefinite periods of time

-Can be scaled for mass production

-Encapsulate and stabilize other nanoparticle agents

Potential Applications

-Manufacturing

-Pharmaceuticals

-Medical/Healthcare

Technology ID

66166

Category

Pharmaceuticals/Drug Delivery & Formulations

Pharmaceuticals/Pharmaceutical Manufacturing & Methods

Authors

Dae Hwan Kim

You-Yeon Won

Further information

Joe Kasper

JRKasper@prf.org

Nathan Smith

nesmith@prf.org

View online

Related Publications:

Kim, Dae Hwan, et. al. Preparation of Super-Stable Gold Nanorods via Encapsulation into Block Copolymer Micelles. ACS Applied Materials & Interfaces. 2012, 4 (4), pp 1872â€“1877.

DOI: 10.1021/am300198v.

TRL: 3

Intellectual Property:

Provisional-Patent, 2012-04-03, United States | Utility Patent, 2013-03-15, United States

Keywords: Gold nanorods, GNR, imaging agents, cancer treatments, block copolymer micelles, self-assembly, nanoparticle agents, super-stable, mass production, pharmaceuticals