

PRODUCTION OF NANOPARTICLES BY LASER IRRADIATION IN MICRO DROPS

Description:

Today, laser ablation is used in a wide variety of fields, including the manufacture of nanoparticles. In general, the products of laser ablation appear as a distribution of particles of different nature and morphology that ranges from an isolated atom, through nanoparticles and microparticles, to millimeter-sized particles. In particular, the device and procedure proposed here is aimed at producing nanoparticles free of contamination from other larger particles by irradiating a microscopic drop containing a precursor solution with a laser pulse whose duration can be chosen in a range from femtoseconds to several nanoseconds and atmospheric pressure. This procedure: increases the reproducibility of laser-matter coupling, prevents the generation of aerosols originating from the precursor and results in adiabatic expansion free of liquid phase condensation.

Keywords:

[Laser](#), [Nanotechnology](#), [Nanoparticles](#), [Microdroplets](#)

Sectors:

[Biotechnology](#), [Engineering](#), [Chemistry](#), [Others](#)

Areas:

[Industrial](#), [Instrumentation](#), [Biotechnology](#), [Nanotechnology](#), [Chemistry](#),
[New technologies](#), [Synthesis and procedures](#)



Advantages:

Among the advantages of this device and its procedure are: • Increases the reproducibility of laser-material coupling, enabling the use of lasers that are more suitable for production environments due to their lower complexity, smaller size and lower cost. • The use of a liquid that contains the precursor in solution opens the door to the use of almost any type of material as a precursor. • The use of a liquid microscopic precursor prevents the generation of condensation and spatter aerosols.

Uses and Applications:

The present invention falls within the field of nanotechnology. Nanoparticles are useful in many fields of physics, chemistry, and biology.

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Applicants: Universidad De Málaga

Inventors: Santiago Palanco Lopez, Maria Mercedes Gabas Perez, Luis Ayala Montoro, Jose Ramon Ramos Barrado, Shanti Bijani Chiquero, Salvatore Marino

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