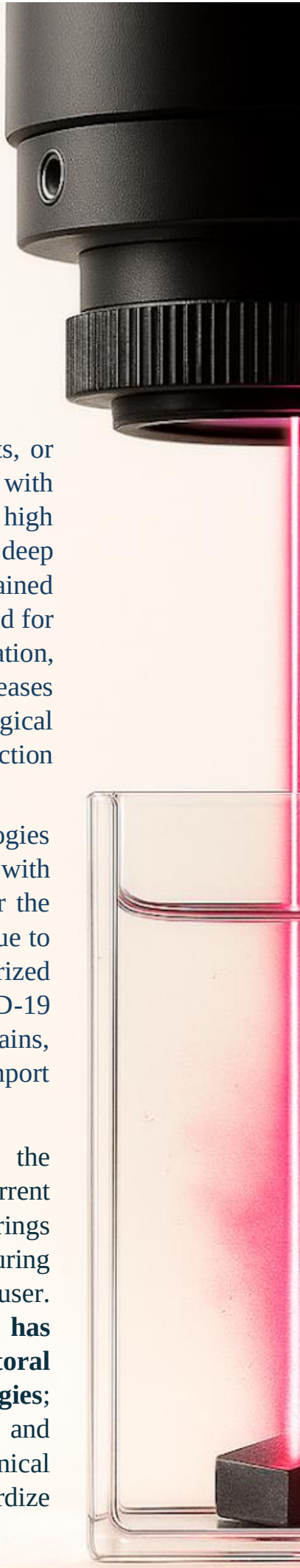
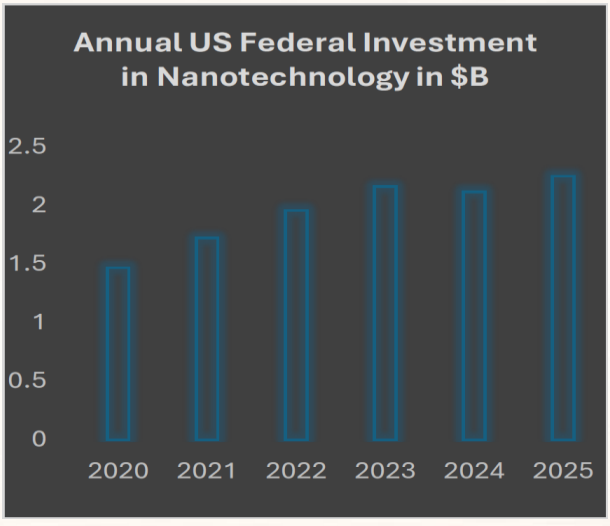
PLAS®
RESEARCH
SOLUTIONS



We present first-in-class commercial solution for laser synthesis of ultra-pure, biocompatible nanoparticles with automated in-line control. Our compact laser synthesis platform (PLAS) designed for National Universities, Biotechnology Research Centers, Pharmaceutical Companies, and Research Laboratories.

Laser synthesis does not require precursors, salts, ligands, surfactants, or toxic reducing agents. It ensures reproducibility and compatibility with biomedical research and manufacturing. It also eliminates the need for high pressures, high temperatures, high voltages, strong magnetic fields, or deep vacuum - thus requiring no specialized equipment, cleanrooms, or trained personnel. Laser synthesis is a **one-step method** that eliminates the need for filtration, chemical purification, drying, packaging, re-sterilization, transportation, and other postprocessing steps. This significantly increases production speed, drastically reduces the risk of chemical and biological contamination, and lowers both capital and operating costs for production lines.

Over the past five years, annual U.S. federal investments in nanotechnologies have grown from **$1.47 billion in FY2020** to **$2.12 billion in FY2024**, with a budget of **$2.25 billion for FY2025**. Cumulative investments under the National Nanotechnology Initiative now exceed **$45 billion** and continue to increase. This indicates a clear demand for clean, well-characterized nanomaterials and domestic production infrastructure. The COVID-19 pandemic revealed vulnerabilities in centralized medical supply chains, emphasizing the need to localize critical material production, cut import dependence, and enable quick response to disruptions.



Our product addresses the limitations of current environment and brings nanoparticle manufacturing directly to the end user. Additionally, the **FDA has established a cross-sectoral approach to nanotechnologies**; the lack of ligands and impurities simplifies preclinical evaluation and standardize characterization.

Pulsed Laser Ablation in Solution (PLAS) is a Laser nanoparticle synthesis based on the physical principle of material evaporation and plasma formation from a target immersed in solution under laser irradiation. The evaporated material and plasma condense in the solution and agglomerate into nanoparticles, forming a colloidal suspension. The solution can be any liquid transparent to the laser wavelength, from water and alcohols to specialized buffers. A target is placed in a sterile cartridge or sterile flow reactor filled with solution. Laser beam scans and evaporates a target. Another monochromatic laser beam periodically passes through the cartridge, tuned to the absorption wavelength of the target material.

As the beam passes through the solution, its energy is absorbed, and the degree of attenuation indicates concentration. Built-in Dynamic Light Scattering (DLS) and Spectrometry modules measure and automatically stop ablation once the desired concentration is achieved.

PLAS PROTOTYPE SPECIFICATIONS

Optical System	Single beam, Littrow	Productivity (mg/h)	20 - 200
Diffraction Grating (l/mm)	1200	Particle Size (nm)	10 - 100
Spectral Width (nm)	4	Materials	Au, Ag, C, Cu, Fe, Pd, Pt, Si, Ti, Zn and oxides
Wavelength Range (nm)	320 - 1100	Laser Source	Fiber
Wavelength Accuracy (nm)	±2	Pulse Duration (ns)	120
Wavelength Repeatability (nm)	0.5	Central Wavelength (nm)	1064
Wavelength Resolution (nm)	0.5	Repetition Rate (kHz)	30 - 60
Stray Light	≤0.2%T@360nm	Beam Quality M2	<1.5
Photometric Range	0 - 200%T, -0.3 - 3.0A, 0-9999C, (0-9999F)	Power (W)	700
Photometric Accuracy	±0.5%T	Voltage (V)	110
Photometric Repeatability	0.2%T	Size (mm)	460x400x390
		Weight (kg)	24

Address: 110 16th Street, Ste 1460, Denver Colorado 80202
Phone: (888) 761-7770
Internet: www.PLASResearch.Solutions
Email: info@PLASResearch.Solutions
LinkedIn: linkedin.com/company/plasrs/