



PLASMATECH
Plasma Diagnostics and Technologies

SPIN-OFF COMPANY OF UNIVERSITY OF PISA



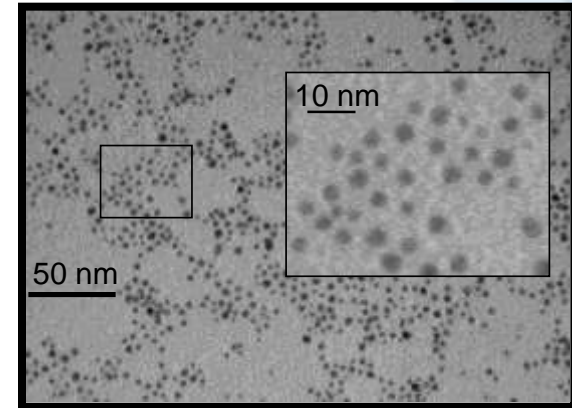


PRODUCTS

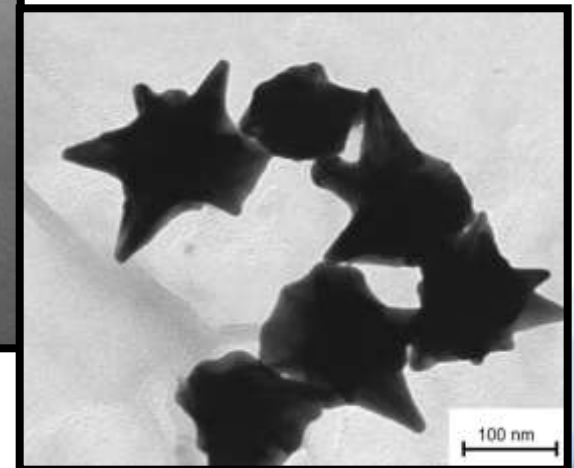
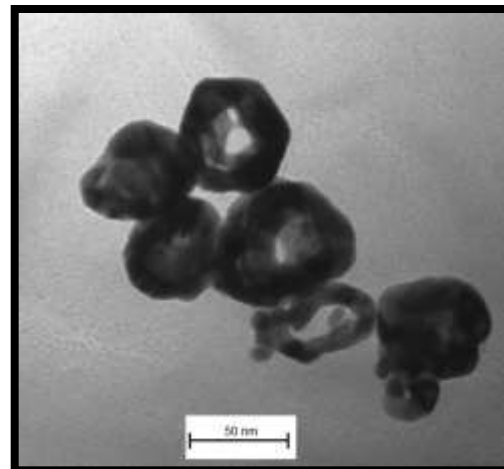


METALLIC NANOPARTICLES PRODUCED
BY LASER ABLATION:

**PURE METALS IN
PURE SOLVENTS**



METAL NANOSTRUCTURES
PRODUCED BY CHEMICAL
REDUCTION:
**UNCAPPED OR WITH
BIOCOMPATIBLE
CAPPING**





NANOPARTICLES

TECHNOLOGY	STRUCTURE	MATERIAL	SOLVENT	SIZE
LASER	Metallic	Au / Ag / TiO ₂ (Cu/Pd)	Water and others	< 10 nm
	Bimetallic	Cu+Ag	Water	2 ÷ 10 nm
		Cu+Pd		
		Ag+Pd		

APPLICATIONS INCLUDE

SERS

CATALYSIS

HYDROGEN STORAGE

DRUG DELIVERY

ENHANCED BACTERICIDAL EFFECT

(OUR AG NANOPARTICLES HAVE 10–100X LARGER BACTERICIDAL EFFECT THAN ANTIBIOTICS)

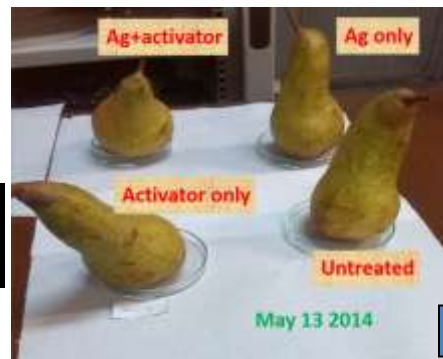
OUR COLLOIDS ARE CHEMICALLY PURE, SO ECO-FRIENDLY AND WITH REDUCED CELLULAR TOXICITY COMPARED TO STANDARD COLLOIDS OBTAINED BY CHEMICAL REDUCTION



Ag NPs OBTAINED BY LASER ABLATION

1. BACTERICIDE AND FUNGICIDE EFFECT 10-100 TIMES BIGGER THAN WHEN OBTAINED BY OTHER METHODS (BOTH GRAM-POSITIVE AND GRAM-NEGATIVE)

2. FRUIT CONSERVATION



1 month



1 week

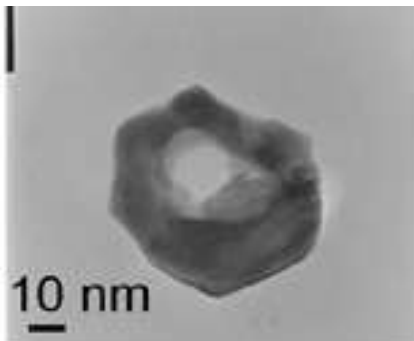


3. FLOWER FRESHNESS MAINTENANCE



NANOSTRUCTURES

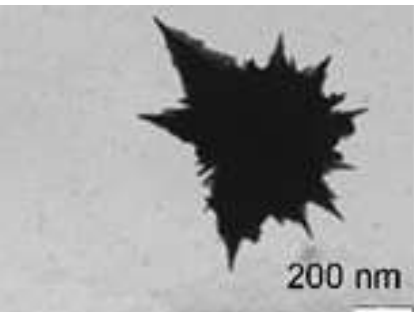
Method	Np Shape	Material	Solvent	∅ [nm]	Details	Note
Chemical	Nanocage	Au/Ag	Water	50÷70	Chitosan capped; with Fluorophores	100% Biocompatible
	Nanostar	Au	Water	50÷150	Without CTAB	100% Biocompatible



NANOCAGES Au/Ag - 100 % BIOCOMPATIBLE

EXTINCTION PEAK COINCIDENT WITH THE TRANSMISSION WINDOW OF THE BLOOD (ABOUT 800 nm)

- PHOTO THERMAL THERAPY
- PHOTOACOUSTIC TOMOGRAPHY
- DRUG DELIVERY

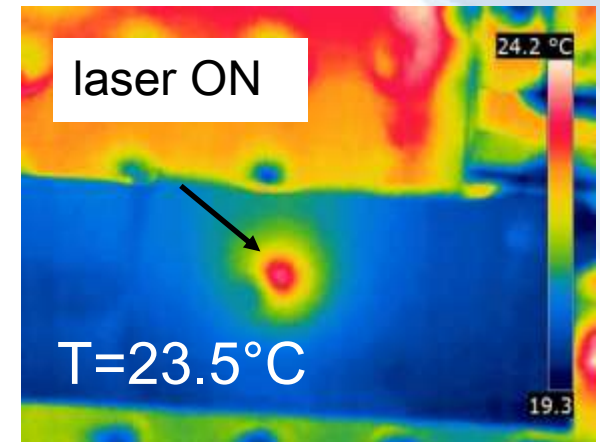
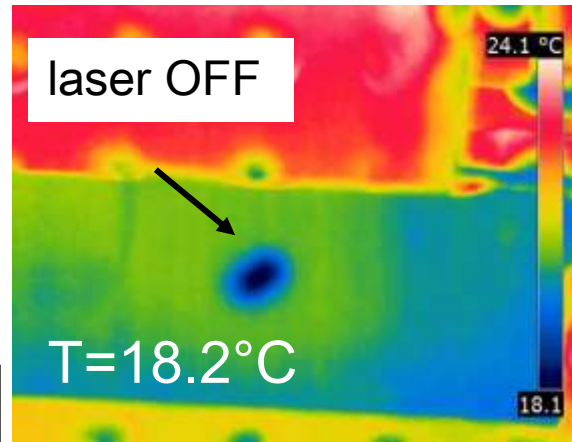
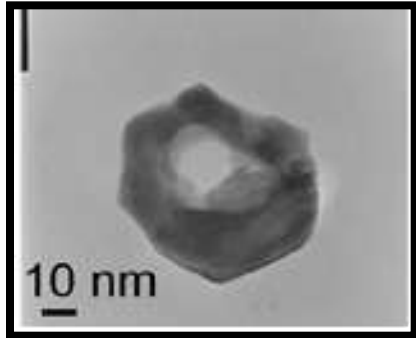


NANOSTARS Au. Now 100% BIOCOMPATIBLE WITHOUT CTAB

- FTIR AND FT RAMAN ENHANCEMENT AND SENSING
- IR SCATTERERS FOR SOLAR CELLS
- CONTRAST MEDIUM

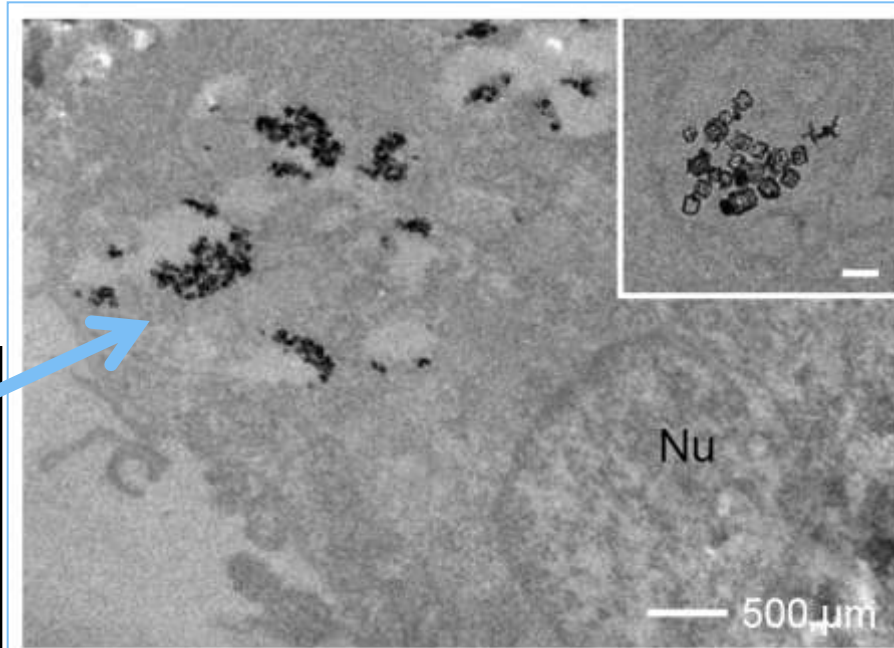


Ag/Au NANOCAGES



1. PHOTOACOUSTIC TOMOGRAPHY OR PHOTOTHERMAL TUMOR THERAPY

2. DRUG DELIVERY (TUMOR THERAPY)
CELLULAR UPTAKE: DISTRIBUTION OF Au NANOCAGES IN MSC





OUR TEAM

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Maurizio Muniz-Miranda – *Lead Scientist*

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