

Materials List for:

Preparation and Photoacoustic Analysis of Cellular Vehicles Containing Gold Nanorods

Lucia Cavigli¹, Francesca Tatini¹, Claudia Borri², Fulvio Ratto¹, Sonia Centi¹, Alberto Cini³, Beatrice Lelli⁴, Paolo Matteini¹, Roberto Pini¹

¹Institute of Applied Physics, Italian National Research Council

²Department of Experimental and Clinical Biomedical Sciences, University of Florence, Firenze

³Department of Physics and Astronomy, University of Florence, Sesto Fiorentino

⁴Department of Pharmacy and Biotechnology, University of Bologna

Correspondence to: Fulvio Ratto at f.ratto@ifac.cnr.it

URL: <https://www.jove.com/video/53328>

DOI: [doi:10.3791/53328](https://doi.org/10.3791/53328)

Materials

Name	Company	Catalog Number	Comments
Hexadecyltrimethylammonium bromide	Sigma-Aldrich	H6269	To synthesize gold nanorods
Gold(III) chloride trihydrate	Sigma-Aldrich	520918	To synthesize gold nanorods
Silver nitrate	Sigma-Aldrich	S6506	To synthesize gold nanorods
L-ascorbic acid	Sigma-Aldrich	A5960	To synthesize gold nanorods
Sodium borohydride	Sigma-Aldrich		To synthesize gold nanoseeds
MeO-PEG-SH	Iris Biotech	PEG1171	To PEGylate gold nanorods. Molecular weight about 5,000 Da.
Acetic acid	Sigma-Aldrich	320099	To PEGylate gold nanorods and solubilize chitosan
Sodium acetate	Sigma-Aldrich	S8750	To PEGylate gold nanorods
(11-Mercaptoundecyl)-N,N,N-trimethylammonium bromide	Sigma-Aldrich	733305	To modify gold nanorods with quaternary ammonium compounds
Dimethyl sulfoxide	Sigma-Aldrich	276855	To solubilize (11-mercaptoundecyl)-N,N,N-trimethylammonium bromide
Polysorbate 20	Sigma-Aldrich	P2287	To centrifuge PEGylated gold nanorods
PBS	Lonza	BE17-516F	To suspend gold nanorods before incubation with cells and to treat pellets of cells
J774a.1	ATCC	TIB-67	Monocyte/macrophage murine cell line
DMEM	Lonza	BE12-707F	Cell culture medium
FBS	Lonza	DE14-801F	To be added to cell culture medium
L-glutamine	Lonza	BE17-605E	To be added to cell culture medium
Penicillin/streptomycin	Lonza	DE17-602E	To be added to cell culture medium
Petri dish	NEST	705001	Cell culture dish
Cell scraper	EuroClone	ES7018	To detach cells
Formaldehyde	Fluka	47630	To fix cells
Chitosan, low molecular weight	Sigma-Aldrich	448869	75-85% deacetylated. Molecular weight about 120,000 Da.
Sodium hydroxyde	Sigma-Aldrich	306576	To insolubilize chitosan and generate the hydrogel
Polystyrene cell culture plates	NEST	702011	Used as molds to fabricate chitosan hydrogels

Optical parametric oscillator pumped by the third harmonic of a Q-switched Nd:YAG laser	Continuum, Santa Clara, USA	Surelite OPO plus	Source of optical excitation for photoacoustic tests
Pyroelectric detector	Gentec, Quebec, Canada	QE8SP	To monitor optical fluence for photoacoustic tests
Pre amplified needle hydrophone	Precision Acoustic, Dorset, UK	Model with 1 mm sensor diameter and 1-20 MHz frequency range	To measure photoacoustic signals