

Supporting Information

Upconversion Nanophosphors for Small-animal Imaging

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Table S1 Abbreviations

Abbreviations	Full name
A549 cells	a human lung carcinoma cell line
AA	azelaic acids
6AA	6-aminohexanoic acid
Ad	adamantine-acetic acid
ADA	11-aminoundecanoic acid
AFM	atomic force microscope
Anti-CEA8	a rabbit antibody
AOT	sodium bis(2-ethylhexyl)sulfosuccinate
APS	3-aminopropyltrimethoxysilane
α -CD	alpha-cyclodextrin
β -CD	beta-cyclodextrin
Ce6	Chlorine 6
ConA	Concanavalin A
CT	computed tomography
CTAB	methylammonium bromide
CTES	3-carboxyethylsilanetriol
CTX	chlorotoxin
CW	continuous-wave
DDA	1,10-decanedicarboxylic
DEG	diethylene glycol
DMSA	dimercaptosuccinic acid
DOX	doxorubicin
DSPE-mPEG	1,2-distearoyl-sn-glycero-3-phosphoethanolamine-N-methoxy (polyethyleneglycol)
EDC	1-ethyl-3-(3-dimethylaminopropyl)-carbodiimide hydrochloride
EDTA	ethylenediaminetetraacetic acid
ESA	excited state absorption
ETU	energy transfer upconversion
F127	propylene oxide block copolymer

FA	folic acid
FDOT	fluorescence diffuse optical tomography
FmocCl	9-fluorenylmethyl chloroformate
FR	folate receptors
FRET	Förster resonance energy transfer
FWHM	full width at half maximum
HDA	hexanedioic acid
HEEDA	N-(2-hydroxyethyl)ethylenediamine
HEDP	1,1-diphosphonic acid
HeLa cells	a human cervical carcinoma cell line
HOS cells	a human osteosarcoma cell line
HR-BCL	binary cooperative ligands
HT29 cells	a human adenocarcinoma cell line
IBU	ibuprofen
IC50	half-maximal inhibitory concentration
ICP-AES	inductively coupled plasma atomic emission spectroscopy
IONPs	ultra-small superparamagnetic Fe ₃ O ₄ nanoparticles
KB cells	a human nasopharyngeal epidermal carcinoma cell line
LbL	layer-by-layer
Ln	lanthanide
LRET	luminescence resonance energy transfer
LSS	liquid, solid and solution phases
LSUCLM	laser scanning upconversion luminescence microscopy
MA	maleimide
3MA	3-mercaptopropionic acid
MCF-7 cells	a human breast cancer cell line
mPEG-OH	polyethylene glycol monomethyl ether
MRI	magnetic resonance imaging
Ms	magnetic susceptibility
MSA	mercaptosuccinic acid
mSiO ₂	mesoporous silica
MTS	(3-(4,5-dimethylthiazol-2-yl)-5-(3-carboxymethoxyphenyl)-2-(4-sulfophenyl)-2H-tetrazolium, sodium salts
MTT	methyl thiazolyl tetrazolium
MUA	11-mercaptoundecanoic acid
NHS	hydroxysuccinimide
NIH 3T3 cells	a mouse embryonic fibroblast cell line
NiNTA	Ninitrilotriacetate
NIR	near-infrared
NOBF ₄	nitrosonium tetrafluoroborate
OA	oleic acid
OA-PAA	octylamine-poly(acrylic acid)
ODE	octadecene
OM	oleylamine

OOA	N-octadecyloleamide
OVCAR3 cells	a human ovarian carcinomal cell line
PA	photon avalanche
PAA	polyacrylic acid
PAH	poly(allylamine hydrochloride)
PALS	periarteriolar lymphoid sheath
PAMAM	poly(amidoamine)
Panc 1 cells	a human pancreatic cancer cell line
PDT	photodynamic therapy
PEG	poly(ethyleneglycol)
PEGBA	poly(ethyleneglycol)bis(carboxymethyl)ether
PEG-b-PLA	poly(ethylene glycol- <i>block</i> -(<i>DL</i>)lactic acid)
PEI	polyethylenimine
PET	positron emission tomography
PMHC18	poly(maleic anhydride-alt-1-octadecene)
PSS	poly(styrene sulfonate)
PTT	photothermal therapy
PVP	polyvinylpyrrolidone
QDs	semiconductor quantum dots
QY	quantum yield
RAW cells	a 264.7 Leukemic monocyte/macrophage cell line
RES	Reticulo-endothelial system
RGD	arginine-glycine-asparatic acid
ROS	reactive oxygen species
Si-DTTA	3-aminopropyl(trimethoxysilyl)diethylenetriamine tetraacetic acid
siRNA	small interference RNA
SkMs	skeletal myoblasts
SPCE	surface-plasmon-coupled emssion
SPECT	single-photon emission tomography
SPION	superparamagnetic iron oxide nanoparticles
Sulfo-NHS	N-hydroxysuccinimide soldium salt
Sulfo-SMCC	sulfo-N-succinimidyl 4-(maleimidomethyl)cyclohexane-1-carboxylate
4T1 cells	a murine breast cancer cell line
TGA	thioglycollic acid
TOP	trioctylphosphine
TPP	meso-teraphenyl porphine
UCL	upconversion luminescence
UCNPs	upconversion nanophosphors
U87MG	a human glioblastoma cell line
ZnPc	zinc phthalocyanice