

Supplementary data

Chelating agents as coating molecules for iron oxide nanoparticles

Debora Bonvin,¹ Jessica A.M. Bastiaansen,^{2,3} Matthias Stuber,^{2,3} Heinrich Hofmann,¹ and Marijana Mionić Ebersold^{1,2,3*}

¹Powder Technology Laboratory, Insitute of Materials, Ecole polytechnique fédérale de Lausanne, Switzerland.

²Department of Radiology, University Hospital (CHUV) and University of Lausanne (UNIL), Switzerland.

³Center of Biomedical Imaging (CIBM), Lausanne, Switzerland.

*Corresponding author E-mail addresses: marijanamionic@gmail.com; Marijana.Mionic-Ebersold@chuv.ch.

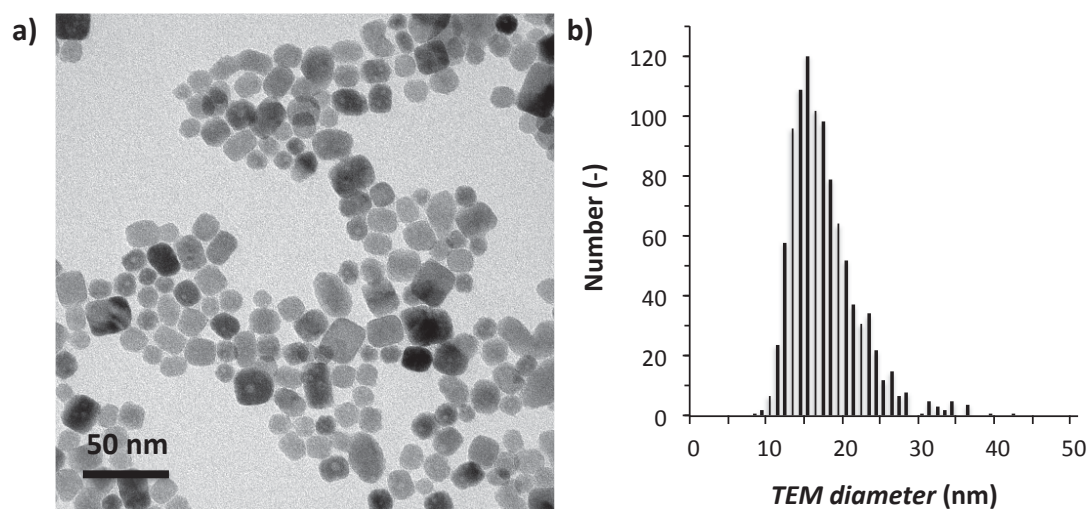


Fig. S1: (a) Representative TEM micrograph and (b) distribution of the *TEM diameter* of uncoated IONPs.

Table S1: pKa values of IDA, NTA, EDTA and DTPA measured at 25 °C.¹

	pKa
IDA	2.82 / 9.87
NTA	2.14 / 2.71 / 9.56
EDTA	2.25 / 2.64 / 7.18 / 9.26
DTPA	2.32 / 2.94 / 4.41 / 8.62 / 9.98

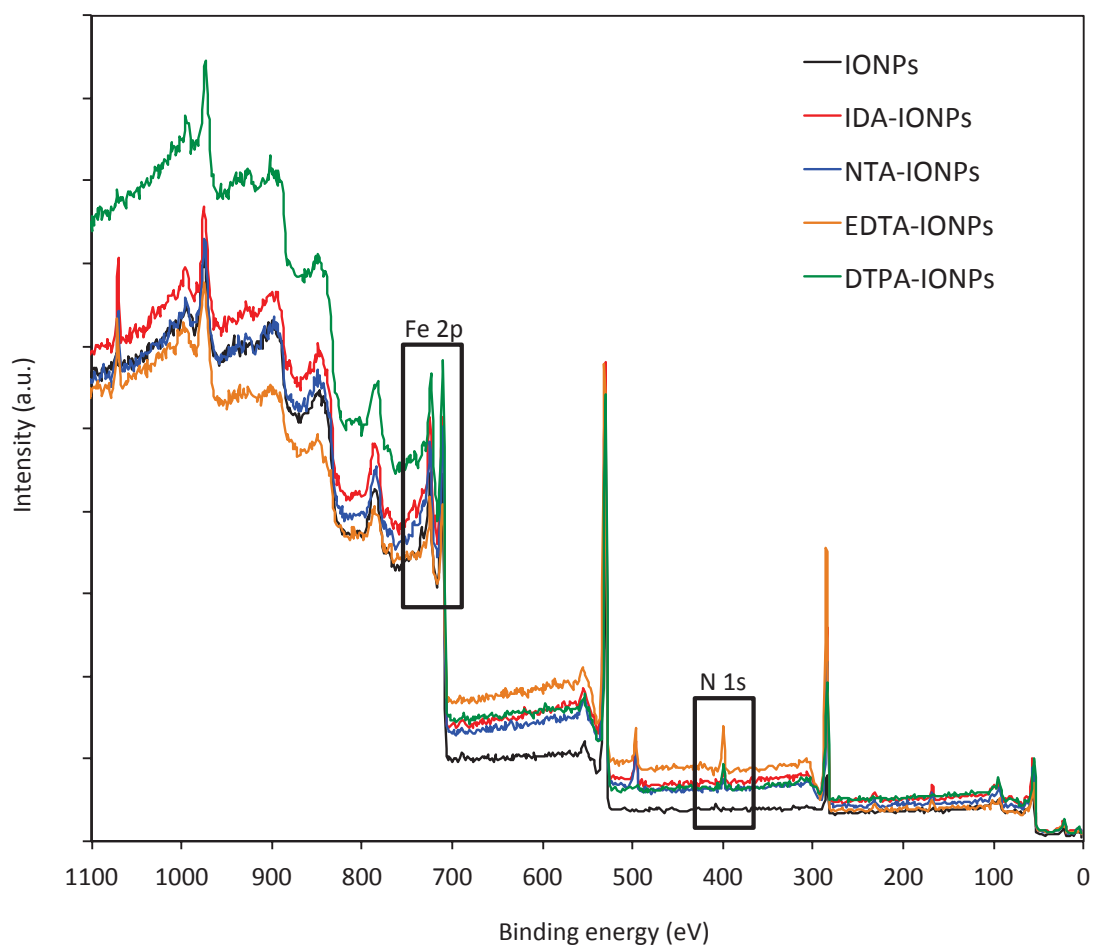


Fig. S2: Overall XPS spectra of uncoated IONPs, IDA-IONPs, NTA-IONPs, EDTA-IONPs and DTPA-IONPs. The N 1s and Fe 2p peaks are highlighted with a black box.

Table S2: Atomic percentages of Fe, O, C and N obtained by XPS in uncoated IONPs, IDA-IONPs, NTA-IONPs, EDTA-IONPs and DTPA-IONPs.

Atomic %	Fe 2p	O 1s	C 1s	N 1s
IONPs	32.0	50.6	17.3	-
IDA-IONPs	18.5	42.6	37.9	1.1
NTA-IONPs	22.0	44.4	31.9	1.7
EDTA-IONPs	8.3	31.1	56.8	3.9
DTPA-IONPs	23.2	43.1	30.7	3.1

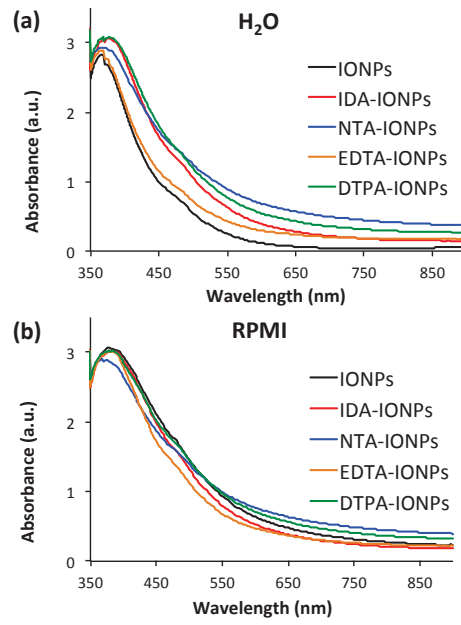


Fig. S3: Absorbance measured by UV-visible spectroscopy in H₂O (a) and in RPMI medium (b) of uncoated IONPs, IDA-IONPs, NTA-IONPs, EDTA-IONPs and DTPA-IONPs.

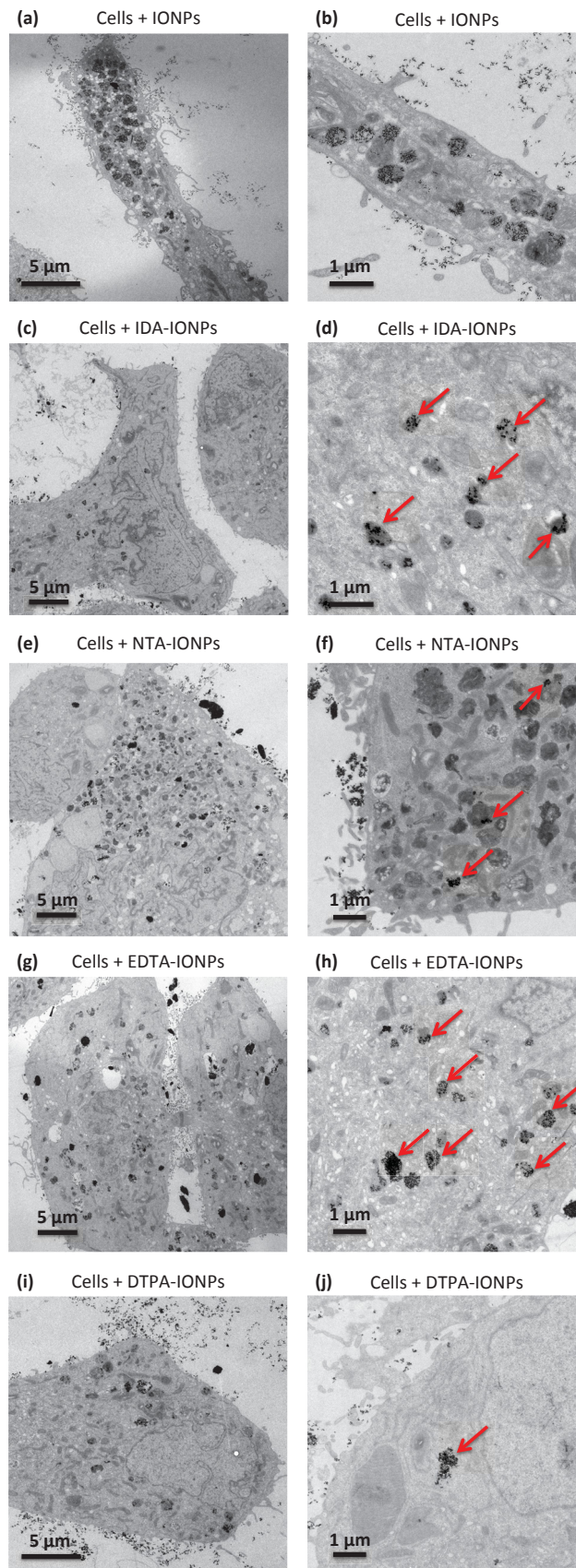


Fig. S4: Representative TEM micrographs of 50 nm-thick sections of LnCaP cells incubated with uncoated IONPs (a, b), IDA-IONPs (c, d), NTA-IONPs (e, f), EDTA-IONPs (g, h) and DTPA-IONPs (i, j) and embedded in resin.

References

- 1 P. Thakur, J. N. Mathur, R. C. Moore and G. R. Choppin, *Inorganica Chim. Acta*, 2007, **360**, 3671–3680.