CORA Cork Open Research Archive
Cartlann Taighde Oscailte Chorcaí

Title	PEGylated gold nanoparticles: polymer quantification as a function of PEG lengths and nanoparticle dimensions
Authors	Rahme, Kamil;Hobbs, Richard G.;Chen, Lan;Morris, Michael A.;O'Driscoll, Caitríona M.;Holmes, Justin D.
Publication date	2013-02-14
Original Citation	RAHME, K., CHEN, L., HOBBS, R. G., MORRIS, M. A., O'DRISCOLL, C. & HOLMES, J. D. 2013. PEGylated gold nanoparticles: polymer quantification as a function of PEG lengths and nanoparticle dimensions. RSC Advances, 3, 6085-6094. http://dx.doi.org/10.1039/C3RA22739A
Type of publication	Article (peer-reviewed)
Link to publisher's version	http://pubs.rsc.org/en/content/articlepdf/2013/ra/c3ra22739a - 10.1039/C3RA22739A
Rights	© Royal Society of Chemistry 2013.
Download date	2026-11-05 18:58:36
Item downloaded from	https://hdl.handle.net/10468/2287

UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

RSC Advances

CORRECTION

View Article Online
View Journal | View Issue

CrossMark click for updates

Cite this: *RSC Adv.*, 2017, **7**, 8798

Correction: PEGylated gold nanoparticles: polymer quantification as a function of PEG lengths and nanoparticle dimensions

Kamil Rahme,*[abc] Lan Chen,[abd] Richard G. Hobbs,[ab] Michael A. Morris,[ab] Caitriona O'Driscoll[e] and Justin D. Holmes[ab]

DOI: 10.1039/c7ra90006f

www.rsc.org/advances

Correction for 'PEGylated gold nanoparticles: polymer quantification as a function of PEG lengths and nanoparticle dimensions' by Kamil Rahme *et al.*, *RSC Adv.*, 2013, **3**, 6085–6094.

Open Access Article. Published on 27 January 2017. Downloaded on 17/02/2017 09:47:12. This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

The authors regret that the surface area calculation of the grafting density was originally calculated using πr^2 instead of $4\pi r^2$. This error does not affect the overall conclusions of this paper. Furthermore, the correct surface area was used in the calculation of the polymer conformation. The corrected grafting densities and foot prints have been included below.

In the abstract, the decrease in grafting density of the mPEG-SH ligands should read "0.983 to 0.07 PEG per nm^2" and the decrease in grafting density of the mPEG$_{10\,000}$-SH should read "0.393 to 0.2 PEG per nm^2".

The data in Table 2 should read:

Table 2. Surface coverage (from TGA) and mPEG-SH layer thickness (from DLS size distribution by volume) on 15 nm gold nanoparticles

mPEG-SH (M_w)	Number of EO	DLS (v)/PEG layer (nm)	Weight loss (%) $T > 320$ °C	N_{PEG} per 15 nm AuNP	Foot print (nm^2)	Grafting density per nm^2
2100	47	2.83 ± 0.66	6.7	695 ± 87	1.02	0.983
5400	122	7.79 ± 1.0	9.9	424 ± 53	1.67	0.6
10 800	245	12.77 ± 1.5	12	278 ± 42	2.54	0.393
19 500	443	21.61 ± 2.5	10.82	132 ± 16.5	5.35	0.187
29 500	670	25.6 ± 3.0	10	81 ± 10	8.77	0.114
51 400	1168	37.15 ± 4.0	10.85	50 ± 6	14.2	0.07

The data in Table 3 should read:

Table 3. Surface coverage (from TGA) of different AuNPs diameter (EM/DLS) coated with mPEG$_{10\,000}$-SH

Diameter (nm)/ EM	Diameter (nm)/ DLS (I)	Weight loss (%) $T > 320$ °C	N_{PEG}/ AuNP	Foot print (nm^2)	Grafting density per nm^2
15 ± 1.8	59 ± 3.5	14.25	278 ± 42	2.54	0.393
30 ± 3.5	72 ± 5	5.7	916 ± 106	3.12	0.323
62.5 ± 6	102 ± 9	1.64	2572 ± 402	5	0.2
93 ± 12	138 ± 10	1.41	6778 ± 814	4.2	0.24
115 ± 10	165 ± 14	1.449	12 960 ± 1227	3.2	0.312

[a]*Materials Chemistry and Analysis Group, Department of Chemistry, The Tyndall National Institute, University College Cork, Cork, Ireland*

[b]*Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN), Trinity College Dublin, Dublin 2, Ireland*

[c]*Department of Sciences, Faculty of Natural and Applied Science, Notre Dame University (Louaize), Zouk Mosbeh, Lebanon. E-mail: kamil.rahme@ndu.edu.lb; Fax: +961 9 225164; Tel: +961 9 218950*

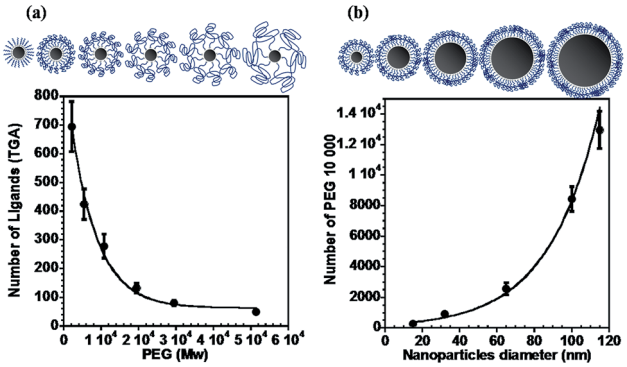
[d]*Department of Chemical Engineering and Biotechnology, University of Cambridge, Pembroke Street, Cambridge, CB2 3RA, UK*

[e]*Pharmacodelivery Group, School of Pharmacy, University College Cork, Cork, Ireland*

This journal is © The Royal Society of Chemistry 2017

Open Access Article. Published on 27 January 2017. Downloaded on 17/02/2017 09:47:12.
This article is licensed under a Creative Commons Attribution 3.0 Unported Licence.

Fig. 5 should be replaced by the following figure:



The text also affects the discussion of Fig. 5 on page 6091 which should read:

"Specifically, the number of PEG molecules grafted to the Au nanoparticles decreased by ~12 fold from 695 ± 87 for $mPEG_{2000}$-SH (0.983 PEG per nm^2) to 50 ± 6 for $mPEG_{48\ 500}$-SH (0.07 PEG per nm^2). The solid line is an exponential fit to the data. Increased conformational entropy of the PEG molecules with polymer chain length leads to an increase in the footprint of the PEG molecules at the Au nanoparticle surface from 1.02 nm^2 for $mPEG_{2000}$-SH to 14.2 nm^2 for $mPEG_{48\ 500}$-SH (see Table 2)

The text discussing $mPEG_{10\ 000}$-SH on the same page also requires amendment:

Finally, some similar behaviour has been observed in this work where the grafting density of $mPEG_{10\ 000}$-SH was higher on 15 nm diameter Au nanoparticles and decreased slightly from 0.393 to 0.2 PEG per nm^2 when the particle size increased to 65 nm in diameter (Table 3)."

The last three lines on page 3 of the ESI should read:

"So from this experiment we estimate that 15 nm AuNPs contain 278 $PEG_{10\ 000}$-SH. The grafting density correspond to 278/706.84 ~ 0.393 $PEG_{10\ 000}$ per nm^2 and finally the foot print of the $PEG_{10\ 000}$ correspond to 1/0.393 ~ 2.54 nm^2."

The Royal Society of Chemistry apologises for these errors and any consequent inconvenience to authors and readers.