



### **Kamil Rahme**

Associate Professor of Chemistry,  
Chairperson, Department of Sciences

**O:** FNAS 1.28

**T :** 09.218950, Ext. 2112

**E :** kamil.rahme@ndu.edu.lb

## **Biography**

Dr. Kamil Rahme received his doctorate in 2008 from the University of Toulouse, France, afterward he joined the material and super critical fluid group directed by Pr. Justin D. Holmes at the Department of Chemistry in University College Cork (UCC), Ireland, as Post-Doctoral Research Associate (PDRA) for nearly 2 years. He joined as Assistant Professor of Chemistry at Notre Dame University in October 2010, and promoted to Associate Professor in 2016, he is currently the Chairperson of the Department of Sciences and teaching different chemistry courses. His research interests are in nanoscience and bio-nanotechnology fields of applied sciences. Dr. Rahme has a strong research background at the interface chemistry, physical chemistry and biology. He has several published papers in multidisciplinary science International journals and conferences. He is also a peer reviewer for several journals of the Royal Society of Chemistry (RSC), American Chemical Society (ACS), Springer, MDPI, etc.

## **Peer-reviewed Journals**

- Anisamide-targeted PEGylated gold nanoparticles designed to target prostate cancer mediate: Enhanced systemic exposure of siRNA, tumour growth suppression and a synergistic therapeutic response in combination with paclitaxel in mice Xue Luana, Kamil Rahme, Zhongcheng Conga, Limei Wang, Yifang Zoua, Yan Hea, Hao Yanga, Justin D. Holmes, Caitriona M. O'Driscoll and Jianfeng Guo. *European Journal of Pharmaceutics and Biopharmaceutics*, 2019, 137, 56–67.
- Jumping on the Bandwagon: A Review on the Versatile Applications of Gold Nanostructures in Prostate Cancer, Monira Sarkis, Esther Ghanem and Kamil Rahme. *Int. J. Mol. Sci.* 2019, 20, 970; doi:10.3390/ijms20040970
- Development of anisamide-targeted PEGylated gold nanorods to deliver epirubicin for chemo-photothermal therapy in tumor-bearing mice, Limei Wang, Jin Pei, Zhongcheng Cong, Yifang Zou, Tianmeng Sun, Fionán Davitt, Adrià Garcia-Gil, Justin D. Holmes, Caitriona M O'Driscoll, Kamil Rahme, Jianfeng Guo. *International Journal of Nanomedicine*, 2019, 14, 1817–1833.
- Chemistry Routes for Copolymer Synthesis Containing PEG for Targeting, Imaging, and Drug Delivery Purposes. Kamil Rahme and Nazih Dagher. *Pharmaceutics* 2019, 11(7), 327; <https://www.mdpi.com/1999-4923/11/7/327>
- Assessment of Charged AuNPs: From Synthesis to Innate Immune Recognition Kamil Rahme, George Minassian, Monira Sarkis, Michel Nakhli, Roland El Hage, Eddy Souaid, Justin D. Holmes, and Ester Ghanem *Journal of Nanomaterials*, Volume 2018, Article ID 9301912, 12 pages <https://doi.org/10.1155/2018/9301912>
- Gold nanoparticles enlighten the future of cancer theranostics. Jianfeng Guo, Kamil Rahme, Yan He, Lin-Lin Li, Justin D Holmes, Caitriona M O'Driscoll. *International Journal of Nanomedicine*, 2017, 12, pp. 6131–6152.
- Rapid Spectrophotometric Method using Mannich Reaction for Metformin Determination in Pharmaceutical Tablets and Human Urine. Jamil Rima, Kamil Rahme, Moussa Moussa, Mikael Rizkallah, Karine Assaker, Jinane K. Chaaban, Frederick Naftolin. *Int. J. Pharm. Sci. Rev. Res.*, March – April 2016, 37(2), Article No. 37, pp. 214–220. ISSN 0976 – 044X

- Bioconjugated Gold Nanoparticles Enhance Cellular Uptake: A Proof of Concept Study for siRNA Delivery in Prostate Cancer Cells. Jianfeng Guo, Caitriona M. O'Driscoll, Justin D. Holmes, Kamil Rahme. *International Journal of Pharmaceutics*, 2016, 509 (1-2), pp. 16–27
- Embedding colloidal nanoparticles inside mesoporous silica using gas expanded liquids for high loading recyclable catalysts. Gillian Collins, Kamil Rahme, John O'Connell and Justin. D. Holmes. *Catal. Sci. Technol.*, 2016, DOI: 10.1039/c6cy00584e
- Anisamide-targeted gold nanoparticles for siRNA delivery in prostate cancer – synthesis, physicochemical characterisation and IN VITRO evaluation. Kathleen A. Fitzgerald, Kamil Rahme, Jianfeng Guo, Justin D. Holmes and Caitriona M. O'Driscoll. *J. Mater. Chem. B*, 2016, 4, pp. 2242–2252
- Evaluation of the physicochemical properties and the biocompatibility of polyethylene glycol-conjugated gold nanoparticles: A formulation strategy for siRNA delivery. Kamil Rahme, Jianfeng Guo, Justin D. Holmes, Caitriona M. O'Driscoll. *Colloids and Surfaces B: Biointerfaces*, 2015, 135 pp. 604–612
- Biomimetic gold nanocomplexes for gene knockdown - will gold deliver dividends for siRNA nanomedicines? Jianfeng Guo, Kamil Rahme, Kathleen A. Fitzgerald, Justin D. Holmes, Caitriona M. O'Driscoll, *Nano Res.*, 2015, 8(10) pp. 3111–3140
- Diameter-Controlled Germanium Nanowires with Lamellar Twinning and Polytypes. Subhajit Biswas, Jessica Doherty, Dipanwita Majumdar, Tandra Ghoshal, Kamil Rahme, Michelle Conroy, Achintya Singha, Michael A. Morris, and Justin D. Holmes, *Chem. Mater.*, 2015, 27 (9), pp 3408–3416
- Positively charged, surfactant-free gold nanoparticles for nucleic acid delivery. Jianfeng Guo, Mark J. Armstrong, Caitriona M. O'Driscoll, Justin D. Holmes, Kamil Rahme, *RSC Adv.*, 2015, 5, pp. 17862–17871
- Bioconjugated Iron Oxide Nanocubes: Synthesis, Functionalization, and Vectorization. Laura Wortmann, Shaista Ilyas, Daniel Niznansky, Martin Valldor, Karim Arroub, Nadja Berger, Kamil Rahme, Justin Holmes, and Sanjay Mathur. *ACS Appl. Mater. Interfaces*, 2014, Issue 6, 19, pp. 16631–16642
- Pegylation Increases Platelet Biocompatibility of Gold Nanoparticles. Maria Jose Santos-Martinez, Kamil Rahme, J. Jose Corbalan, Colm Faulkner, Justin D. Holmes, Lidia Tajber, Carlos Medina, and Marek Witold Radomski. *J. Biomed. Nanotechnol.*, 2014, Vol. 10, 1–12. doi:10.1166/jbn.2014.1813
- Advanced Oxidation of Olive Mill Wastewater OMW by an Oxidative Free- Radical Process Induced With Zero Valent Iron. Jamil Rima, Kamil Rahme and Karrine Assaker. *Journal of Food Research*, 2014, Volume 3, N 6, 70-82
- The Use of Modified Beetroot Fibers by Sodium Dodecyl Sulfate (SDS) Cleaning Water Contaminated by Organic and Inorganic Compounds. Jamil Rima, Kamil Rahme and Karrine Assaker. *Journal of Food Research*, 2014, Volume 3, N 5, 19-30.
- Highly stable PEGylated gold nanoparticles in water: applications in biology and catalysis. Kamil Rahme, Marie Therese Nolan, Timothy Doody, Gerard P. McGlacken, Michael A. Morris, Caitriona O'Driscoll and Justin D. Holmes. *RSC Adv.*, 2013, 3, pp. 21016–21024
- PEGylated gold nanoparticles: polymer quantification as a function of PEG lengths and nanoparticle dimensions. Kamil Rahme, Lan Chen, Richard G. Hobbs, Michael A. Morris, Caitriona O'Driscoll and Justin D. Holmes. *RSC Adv.*, 2013, 3, 6085-6094
- Non-solvolytic Synthesis of Aqueously Soluble TiO<sub>2</sub> Nanoparticles: Real-Time Dynamic Measurements of the Nanoparticle. Lan Chen, Kamil Rahme, Justin D Holmes, Michael A Morris and Nigel K H Slater. *Nanoscale Research Letters*. 2012, 7-297, doi: 10.1186/1556-276X-7-297
- The use of quartz crystal microbalance with dissipation (qcm-d) for studying nanoparticle-induced platelet aggregation. Maria Jose Santos-Martinez, Iwona Inkielewicz-Stepnia, Carlos Medina; Kamil Rahme, Deirdre D'Arcy; Daniel Fox, Justin D Holmes, Hongzhou Zhang, Marek Witold Radomski. *International Journal of Nanomedicine*. 2012, 7-13.
- Synthesis and Stabilisation of Gold Nanoparticles coated with Poly(ethylene glycol) for siRNA Delivery. Kamil Rahme, Timothy Doody, Aklesh K Jain, Lan Chen, Michael Morris and Justin D. Holmes. *Journal of Biomedical Engineering Research*. 2011; 1(1): 5-13
- A Simple Protocol to Stabilize Gold Nanoparticles using Amphiphilic Block Copolymers: Stability Studies and Viable Cellular Uptake. Kamil Rahme, Patricia Vicendo, Bruno Payré, Cedric Gaillard, Cedric Ayela, Christophe Mingotaud and Fabienne Gauffre. *Chemistry-A European Journal*, 2009, 15, 42, 1151-1159
- Pluronic® stabilized gold nanoparticles: Investigation of the structure of the polymer-particle Hybrid. Kamil Rahme, Julien Oberdisse, Ralph Schweins, Cedric Gaillard, Jean Daniel Marty, Christophe Mingotaud, and Fabienne Gauffre. *ChemPhysChem*; 2008, 9, 2230-2236
- Bolaamphiphile Surfactants as Nanoparticle Stabilizers: Application to Reversible Aggregation of Gold Nanoparticles. Stephanie Sistach, Kamil Rahme, Nelly Pérignon, Jean Daniel Marty, Nancy Lauth-de Viguerie, Fabienne Gauffre and Christophe Mingotaud. *Chem of Mater* ; 2008, 20, 1221-1223
- A Systematic Study of the Stabilization in Water of Gold Nanoparticles by Poly(ethylene Oxide)-Poly(Propylene Oxide)-Poly(Ethylene Oxide) Triblock Copolymers. Kamil Rahme, Fabienne Gauffre, Jean Daniel Marty, Bruno Payré and Christophe Mingotaud. *J. Phys. Chem. C.*, 2007; 111 (20), 7273 -7279

## Peer-reviewed Conference Proceedings

- Kamil Rahme, George Minassian, Esther Ghanem, Michel Nakhl, Roland El Hage, Eddy Souaid, and Justin D. Holmes (2018). A Simple Synthesis of Polymer Coated Gold and Silver Nanoparticles in Water for Potential Use in Biomedical Applications. *Advanced Materials: ThechConnect Briefs 2018*, ThechConnect. Org, ISBN 978-0-9988782-2-5, Chapter 1, pp.87-90.
- Kamil Rahme, George Minassian, Esther Ghanem, Eddy Souaid, Jianfeng Guo, Caitriona M. O'Driscoll and Justin D. Holmes (2018) Dendrigrft Poly-Llysine (d-PLL) Coated Gold Nanoparticles in Water for siRNA Delivery to Prostate Cancer Cells. *Advanced Materials: ThechConnect Briefs 2018*, ThechConnect. Org, ISBN 978-0-9988782-2-5, Chapter 1, pp.91-94.
- Esther Ghanem, Monira Sarkis, Kamil Rahme, George Minassian, Justin D. Holmes, Hasan Naim, Gulio Fracasso (2018) Targeting prostate cancer cells with D2B-gold Nanoparticles. *Proceedings of the Nanotech France 2018 International Conference (Nanotech France 2018) Paris, France, June 27 - 29, 2018*, pp 67-71 DOI: <https://doi.org/10.26799/cp-nanotechfrance2018>
- Kamil Rahme, Jianfeng Guo, Subhajit Biswas., Caitriona M. O'Driscoll and Holmes Justin D. (2017) Branched PEI Capped Gold Nanoparticles in Water for siRNA Delivery to Cancer Cells *Advanced Materials: ThechConnect Briefs 2017*, ThechConnect. Org, ISBN 978-0-9975117-8-9, Chapter 4, pp.159-162.
- Kamil Rahme, Jianfeng Guo, Caitriona M. O'Driscoll, and Justin D. Holmes (2015) BioConjugated Gold Nanoparticles for Enhanced Delivery and Cellular Uptakes. *Nanotech France 2015 Conference & Exhibition*, June 15 - 17, 2015, Paris, France.
- Kamil Rahme and Justin D. Holmes (2015) Synthesis and Applications of Aqueous Soluble Metal and Metal oxide Nanoparticles. *LAAS 21, 2015, International Science Conference, Lebanon*, paper number 1570106407, pp. 91–92
- Kamil Rahme and Justin D. Holmes (2014) Hydroxylamine-O-sulfonic acid as a New Reducing Agent for the Formation of Nearly Monodisperse Gold Nanoparticles in water: Synthesis Characterisation and Bioconjugation. *NSTI Nanotech 2014* [www.nsti.org](http://www.nsti.org), ISBN 978-1-4822-5826-4Vol.1, 2014, pp.147-150. <http://www.techconnectworld.com/World2014/a.html?i=153>
- Kamil Rahme and Justin D. Holmes (2014) Noble Metal Nanoparticles in water: Synthesis, Characterization and Applications. *20thLAAS 2014International Science Conference, Lebanon* pp. 539–540.
- Kamil Rahme, Marie Therese Nolan, Thimothy Doody, Gerard P. McGlacken, Caitriona O'Driscoll, and Justin D. Holmes. (2012), Highly Stable PEGylated Gold Nanoparticles in Water: Applications in Biology and Catalysis. *NSTI Nanotech 2012*, ISBN 978-1-4665-6274-5 Vol. 1, 2012, pp 5-8. <http://www.nsti.org/procs/Nanotech2012v1/1/W2.112>

## Chapters in Books

- Aqueous Stable Colloidal Gold Nanoparticles from Synthesis and Conjugation to Biomedical application. Kamil Rahme and Justin D. Holmes. *Nanoengineering, Quantum Science, and Nanotechnology Handbook*, Chapter 6 117-136. In press, published in a hardback version January 2020.
- Bioconjugated Gold Nanoparticles Enhance siRNA Delivery in Prostate Cancer Cells. Kamil Rahme, Jianfeng Guo, Justin D. Holmes. *Methods Mol Biol.* 2019;1974:291-301. doi: 10.1007/978-1-4939-9220-1\_21.
- Gold Nanoparticles: Synthesis Characterization and Conjugation. Kamil Rahme and Justin D. Holmes, *Dekker Encyclopedia of Nanoscience and Nanotechnology*, Third Edition Taylor and Francis: New York, Published online: 31 Aug 2015; 1-11. <http://dx.doi.org/10.1081/E-ENN3-120053520>

## Specialized Reports

- Progress report CNRS-GRP 2015 "Synthesis and bioconjugation of nanoparticles for potential cancerous tumors therapy", Kamil Rahme, 2016.
- Final Report CNRS-GRP 2015 – "Synthesis and bioconjugation of nanoparticles for potential cancerous tumors therapy", Kamil Rahme, 2018.

## Esteemed indicators

- Affiliated Researcher (Summer Visiting Professor) at the Materials Chemistry and Analysis Goup, Department of Chemistry, University College CorK, Ireland.

## CV

<https://www.ndu.edu.lb/Library/Assets/Files/Documents/NDUFacultyProfiles/NDUFacultyCVs/Kamil%20Rahme.pdf>