

# Lucien Roach

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**Chargé de Recherche**  
ENS Lyon – CNRS – UMR 5182

## FORMATION

- 2019** Ph.D. Physics  
University of Leeds, UK
- 2015** M.Phys., B.Sc. Physics  
1<sup>st</sup> (Hons); University of Leeds, UK
- 2010** B.A. Archaeology & Ancient History  
1<sup>st</sup> (Hons); Newcastle University, UK

## EXPÉRIENCE PROFESSIONNELLE

### 2024+ Chargé de Recherche

Laboratoire de Chimie, ENS de Lyon (UMR5182), Lyon

**2024** Chercheur Postdoctoral - Synthèse en flux continu de nanomatériaux guidée par des réseaux neuronaux, ICMCB (UMR5026), Bordeaux

**2022-23** Chercheur Postdoctoral - Sels fondus hydrothermaux pour des matériaux à haut degré d'oxydation du Mn(V) assistés par l'apprentissage automatique, ICMCB (UMR5026), Bordeaux

**2021-22** Chercheur Postdoctoral - Croissance de coquilles d'or sur des nanoparticules de silicium ICMCB (UMR5026), Bordeaux

**2019-21** Chercheur Postdoctoral - Développement de dodécapodes d'argent pour les métasurfaces de Huygens, ICMCB (UMR5026), Bordeaux

**2015-19** Doctorant - Synthèse, fonctionnalisation et application de nanoparticules enrobées de phospholipides pour la thérapie photothermique plasmonique du cancer  
*Molecular and Nanoscale Physics, University of Leeds, Sept 2019*

## PRODUCTION SCIENTIFIQUE

21 publications, *h*-index = 11, 444 citations

- 2025** 21. Crystallization of manganese (V) oxides by hydroflux synthesis  
CVM Inocêncio, ... , [L. Roach](#), ... D Portehault\* *Inorg. Chem.* **64**, 5122.
- 2024** 20. Molten salt-based process development by machine learning assisted thermodynamic evaluation  
[L. Roach](#), A Erriguible, C Aymonier\* *Chem Eng Sci* **299**, 120433.
19. Control of the spatial correlation of perforations in silica thin films as a function of solution conditions  
J Castets, ... , [L. Roach](#)\*, GL Drisko\* *Chem. Commun.* **60**, 9266.
- 2023** 18. Applications of machine learning in supercritical fluids research  
[L. Roach](#), G-M Rignanese, A Erriguible, C Aymonier\*. *J. Supercrit. Fluids* **202**:106051.
17. Ag nanoshells with optimized infrared optical response  
L Lermusiaux, [L. Roach](#), M Lehtihet, ... , M Tréguer-Delapierre\*. *Nanomaterials* **13**:614.
16. The effect of solvent on convectively-driven SiO<sub>2</sub> particle assembly  
[L. Roach](#)\*, D Gonzalez-Rodriguez, J Gao, ... , GL Drisko\*. **2023** *Langmuir* **39**:4216.
15. Symmetric plasmonic nanoparticle clusters  
[L. Roach](#), L Lermusiaux, A Baron, M Tréguer-Delapierre\* in Y Yin, Y Lu, Y Xia (eds.) *Encyclopedia of Nanomaterials* Elsevier: Amsterdam 33
- 2022** 14. Bottom-up synthesis of meta-atoms as building blocks in self-assembled metamaterials  
[L. Roach](#), L Lermusiaux, A Baron, M Tréguer-Delapierre\* *Nano Ex.* **3**:021003.
13. Controlling disorder in self-assembled colloidal monolayers via evaporative processes  
[L. Roach](#), A Hereu, P Lalanne, ... , K Vynck\*, GL Drisko\* *Nanoscale* **14**:3324.
12. Controlling the optical properties of Au nanorods in one-pot syntheses  
[L. Roach](#), PL Coletta, K Critchley, SD Evans\* *J. Phys. Chem. C* **126**:3235.
11. Positively charged additives facilitate incorporation in inorganic single crystals  
O Nahi, A Broad, AN Kulak, ... , [L. Roach](#), ... , FC Meldrum\* *Chem. Mater.* **34**:4910.
10. Improved low temperature sinter bonding using Ag nanocube superlattices  
M Bronchy, L Roach, L Mendizabal, ... , M Tréguer-Delapierre\* *J. Phys. Chem. C* **16**:1644.
- 2021** 9. Synthesis of NIR absorbent triangular Au nanoplates by biomineralisation peptides  
M Tanaka\*, M Hayashi, [L. Roach](#), ... , Mina Okochi\* *Acta Biomater* **131**:519.

	8. Evaluating phospholipid-functionalized Au nanorods for <i>in vivo</i> applications <u>L Roach</u> , ME Booth, N Ingram, ... , SD Evans* <i>Small</i> <b>17</b> :2006797.
<b>2020</b>	7. Nanoparticle-loaded hydrogels for antimicrobial peptide release SCT Moorcroft, <u>L Roach</u> , DG Jayne, ZY Ong*, SD Evans* <i>ACS Appl Mater Interfaces</i> <b>12</b> :24544. 6. One-step preparation of biocompatible gold nanoplates S Ye, SD Connell, JR McLaughlan, <u>L Roach</u> , ... , SD Evans* <i>Adv Sci</i> <b>6</b> :1900911. 5. Exploring high aspect ratio Au nanotubes as cytosolic agents Ye, AA Azad, JE Chambers, ... , <u>L Roach</u> , ... , SJ Marciniak*, SD Evans* <i>Small</i> <b>16</b> :2003793.
<b>2019</b>	4. Sub-nanometer thick Au nanosheets as highly efficient catalysts S Ye, AP Brown, AC Stammers, ... , <u>L Roach</u> , ... , SD Evans* <i>Adv Sci</i> <b>6</b> :1900911. 3. Rational screening of biomineralisation peptides for colour-selected one-pot gold nanoparticle syntheses M Tanaka*, Y Takahashi, <u>L Roach</u> , K Critchley, SD Evans, M Okochi* <i>Nanoscale Adv</i> <b>1</b> :71.
<b>2018</b>	2. Morphological control of seedlessly-synthesized Au nanorods using binary surfactants <u>L Roach</u> , S Ye, SCT Moorcroft, K Critchley, PL Coletta, SD Evans* <i>Nanotechnology</i> <b>29</b> :135601.
<b>2014</b>	1. From the Severans to Constantius Chlorus: The lost century <u>L Roach</u> * <i>J. Roman Arch. Sup.</i> <b>93</b> :105.

## PRÉSENTATIONS EN PERSONNE

<b>2025</b>	<ul style="list-style-type: none"> <li>• 8<sup>th</sup> Int. Conf. on Multifunctional, Hybrid and Nanomaterials (HyMa) – Montpellier</li> <li>• CECAM Workshop on Crystallization and Self-Assembly – Roscoff – <b>Présentation invitée.</b></li> <li>• 15<sup>th</sup> Int. Conf. on Metamaterials, Photonic Crystals and Plasmonics (META) – Spain – <b>Présentation invitée.</b></li> <li>• Gold – San Sebastian, Spain</li> <li>• Chemical Nanoscience Early Career Summer Symposium – Leeds, UK – <b>Présentation invitée.</b></li> </ul>
<b>2024</b>	• Institut de Physique et Chimie des Matériaux de Strasbourg (IPCMS) – Strasbourg – <b>Présentation invitée</b>
<b>2023</b>	<ul style="list-style-type: none"> <li>• ACS Fall Meeting – San Francisco – speaker (2 talks)</li> <li>• Laboratoire de Chimie d'ENS de Lyon – Lyon – <b>Présentation invitée.</b></li> <li>• European Meeting on Supercritical Fluids – Budapest – speaker</li> </ul>
<b>2018</b>	<ul style="list-style-type: none"> <li>• Institute of Physics Nanomedicine and Characterisation Workshop – London – <b>Présentation invitée.</b></li> <li>• 8<sup>th</sup> Chemical Nanoscience Symposium – Newcastle University, UK – Prix du poster (2<sup>e</sup> place)</li> <li>• RSC-NPL Nanoparticle Concentration Symposium – London – Prix du poster (1<sup>e</sup> place)</li> </ul>
<b>2017</b>	• NIHR Colorectal Therapies HTCf National Meeting – Leeds, UK – Prix du poster (1 <sup>e</sup> place)

## PRÉSENTATIONS EN PERSONNE

<b>2024</b>	<i>Institut de physique et chimie des Matériaux de Strasbourg (IPCMS)</i> – Strasbourg – invited seminar
<b>2023</b>	ACS Fall Meeting – San Francisco – speaker (2 talks) <i>Laboratoire de Chimie d'ENS de Lyon</i> – Lyon – invited seminar European Meeting on Supercritical Fluids – Budapest – speaker
<b>2018</b>	Institute of Physics Nanomedicine and Characterisation Workshop – London – Invited speaker RSC-NPL Nanoparticle Concentration Symposium – London – Poster Prize (1 <sup>st</sup> place) 8 <sup>th</sup> Chemical Nanoscience Symposium – Newcastle University, UK – Poster Prize (2 <sup>nd</sup> place)
<b>2017</b>	NIHR Colorectal Therapies HTCf National Meeting – Leeds, UK – Poster Prize (1 <sup>st</sup> place)

## PRIX ET BOURSES

<b>2025</b>	<ul style="list-style-type: none"> <li>• Amorçage Europe – Auteur principal – 7 k€ Fonds d'amorçage pour les projets européens</li> <li>• METSA Spring Call – Auteur principal</li> </ul>
<b>2024</b>	<ul style="list-style-type: none"> <li>• CNRS-University of Toronto – Co-auteur – 135 k€ Bourse de thèse + bourse de voyage</li> </ul>
<b>2023</b>	<ul style="list-style-type: none"> <li>• ANR AAP Générique PRC – Work package leader – 548 k€ AIM - Artificial Intelligence design and synthesis of nanoparticles and nanoMaterials (ANR-23-CE09-0011)</li> </ul>
<b>2018</b>	<ul style="list-style-type: none"> <li>• Fonds France Canada Pour La Recherche – Co-auteur – 11 k€ Bourse de voyage, University of Alberta</li> </ul>
<b>2015</b>	<ul style="list-style-type: none"> <li>• 2015 PhD Scholarship – Auteur principal – ~86 k€ University Research Scholarship, bourse de thèse, University of Leeds</li> </ul>