

Grégory Nocton, Ph.D

Laboratoire de Chimie Moléculaire (UMR 9168)
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French, 34 years old, married, one child

Present Position

- 2011 - **CNRS Researcher (CRCN) – Institut of Chemistry**
Laboratoire de Chimie Moléculaire (UMR 9168) - Ecole polytechnique, France
- 2017 - **Associate Professor of Inorganic Chemistry** at Ecole polytechnique

Education

- 2016 **Habilitation (HDR)**, Université Paris-Sud, Université Paris-Saclay, France
- 2009-2011 **Postdoctoral fellowship at UC Berkeley / Lawrence Berkeley National Laboratory**
Prof. Richard A. Andersen (UC Berkeley)
- 2006-2009 **Ph.D. in Inorganic Chemistry**, University of Grenoble, France.
CEA Grenoble / Laboratoire de Chimie Inorganique et Biologique
Dr. Marinella Mazzanti
- 2004-2006 **Master of Science (Inorganic Chemistry)**
University of Grenoble, France (Dr. Marinella Mazzanti)
Technische Universität München, Germany (Prof. Dr. F. H. Köhler)
University of Reims-Champagne, France (Prof. Françoise Chuburu)
- 2001-2004 **Bachelor of Science**, University of Reims-Champagne, France.

Teaching Experience

- 2017- **Ecole polytechnique – Paris Saclay**: Associate Professor of Inorganic Chemistry (64 h/year)
- 2012-2017 **Ecole polytechnique – Paris Saclay**: Lecturer, (NMR, Magnetism, EPR, Group theory, IR/Raman, Optical transitions) supramolecular chemistry, Graduate Level, 44 h/year
- 2012-2016 **Ecole polytechnique**: Organometallic/Inorganic Chemistry Lab training (36 h/year)
- 2006-2009 **University of Grenoble**: Teaching Assistant (Solution Chemistry, 76h/year)

Distinctions and Grants

- PEDR **2017-2021**: Management and Research bonus from the CNRS
- ERC Starting Grant (**2017-2022**): 1.5 M€, Principal Investigator
- Bronze medal of the CNRS (Young Investigator Award, CNRS) - **2016**
- ANR ReDivaLan (**2015-2018**): 220 k€, coordination of the consortium
- ANR PsalenOx (**2013-2017**): 30 k€; member of the consortium
- Best Talk Award (French Chemical Society, Coordination Chemistry Division, Lyon, February-**2013**)
- Best Talk Award (French Chemical Society, Coordination Chemistry Division, Reims, January-**2009**)
- Best Poster Award from the Graduate School in chemistry (June-2008)
- Master studies Scholarship from the French Office for the Higher Education and Research (2005-2006)
- Student Research Scholarship from the German-French Youth Office (May 2005- August 2005)

Academic Record

- 36 publications in peers reviewed international journals (5 *Angew. Chem. Int. Ed.*, 5 *J. Am. Chem. Soc.*, 1 *Chem. Sci.*)
- 32 Oral presentations (8 international conferences, 18 invited seminars and workshops)
- 10 Poster presentations (6 international conferences, 3 Gordon Research Conference)
- Science popularization actions (5), and conferences organization (2, one as leader)
- Supervision of 4 PhD students, 1 post-doc, 5 master students and 5 undergraduate students
- Web of science Researcher ID: D-4435-2009, H-index: 15, average of 22.0 citations / article.

Peer reviewed articles

36. Nocton G.* *L'Act. Chim.*, **2017**, 484-490
Degrés d'oxydation métalliques et ligands redox non-innocents: de Charybde en Scylla (Metallic oxidation states and redox non-innocent ligands: between Scylla and Charybdis)
35. Xemard, M.; Goudy, V.; Braun, A.; Tricoire, M.; Cordier, M.; Ricard, L.; Castro, L.; Louyriac, E.; Kefalidis, C. E.; Clavaguera, C.; Maron, L.; **Nocton, G.***, *Organometallics*, **2017**, *36*, 4660-4669
"Reductive Disproportionation of CO₂ with Bulky Divalent Samarium Complexes"
34. Mustieles Marin, I., Cheisson, T., Chauhan, R. S., Herrero, C., Cordier, M., Clavaguera, C.,* **Nocton G.***, Affrant A.*, *Chem. Eur. J.*, **2017**, *23*, 17240-17255
"Electronic structure of mono-oxidized copper and nickel phosphasalen complexes"
33. Goudy, V., Jaoul A., Cordier M., Clavaguera, C., **Nocton G.***, *J. Am. Chem. Soc.*, **2017**, *139*, 10633-10636
"Tuning the stability of Pd(IV) intermediates using a redox non-innocent ligand combined with an organolanthanide fragment"
32. Jaoul A., **Nocton G.***, Clavaguera C.*, *Chem. Phys. Chem.*, **2017**, *18*, 2688-2696
"Assessment of density functionals for computing thermodynamic properties of lanthanide complexes"
31. Salomon, W., Paille, G., Gomez-Mingot, M., Mialane, P., Marrot, J., **Nocton, G.**, Mellot-Draznieks, C., Fontecave, M., Dolbecq A., *Cryst. Growth Des.*, **2017**, *17*, 1600-1609
"Effect of Cations on the Structure and Electrochemical Response of Polyoxometalate-Based Coordination Polymers"
30. Xémard, M., Jaoul, A., Cordier, M., Molton, F., Cador, O., Le Guennic, B., Duboc, C., Maury, O., Clavaguera, C., Nocton, G.*, *Angew. Chem. Int. Ed.*, **2017**, *56*, 4266-4271 (back cover)
"Divalent thulium triflate: a structural and spectroscopic study"
29. Kriegel, B. M., Naested, L. C. E., **Nocton, G.**, Lakshmi, K. V., Lohrey, T. D., Bergman R. G., Arnold J., *Inorg. Chem.*, **2017**, *56*, 1626-1627
"Redox Initiated Reactivity of Dinuclear Niobium Imido Complexes"
28. Jaroschik, F., Momin, A., Martinez, A., Harakat, D., Ricard, L., Le Goff, X.-F., **Nocton, G.***, *Organometallics*, **2016**, *35*, 2032-2038.
"Synthesis and Characterization of 1,1'-diphosphaplumbocenes: oxidative ligand transfer with divalent thulium complexes,
27. Jaoul, A., Clavaguera C., **Nocton G.***, *New J. Chem.*, **2016**, *8*, 6643-6649.
"Tetramethylbiphosphinine Complexes of Cp*₂Yb and Cp*₂Sm: Solid-State Structure, Solution NMR Spectroscopy and Theoretical Calculations"
26. Cheisson, T., Auffrant, A., **Nocton G.***, *Organometallics*, **2015**, *34*, 5470-5478.
"η⁵-η¹ Iminophosphoranyl Pincer Ligands: Solid State Structures and Solution NMR ¹J_{Yb-P} Coupling Constants"
25. Andrez J., Bozoklu, G., **Nocton, G.**, Pécaut, J., Scopelliti R., Dubois, L., Mazzanti, M., *Chem. Eur. J.*, **2015**, *21*, 15188-15200.
"Lanthanide(II) Complexes Supported by N,O-Donor Tripodal Ligands: Synthesis, Structure and Ligand-Dependent Redox Behavior",
24. Benito, Q., Le Goff, X., **Nocton, G.**, Fargues, A., Garcia, A., Berhault, A., Kahlal, S., Saillard, J. Y., Martineau, C., Gacoin, T., Boilot, J.-P., Perruchas, S., *Inorg. Chem.*, **2015**, *54*, 4483-4494.
"Geometry Flexibility of Copper Iodide Clusters: Variability in Luminescence Thermochromism"
23. Benito Q., Maurin I., Cheisson T., **Nocton G.**, Fargues A., Garcia A., Martineau C., Gacoin T., Boilot, J.-P., Perruchas S., *Chem. A Eur. J.*, **2015**, *21*, 5892-5897.

“Mechanochromic luminescence of Copper Iodide Clusters”

22. **Nocton G.***, Ricard L., *Chem. Commun.*, **2015**, 51, 3578-3581.

“Reversible C-C coupling in phenanthroline complexes of divalent samarium and thulium”

21. Gianetti, T.L, **Nocton G.***, Minasian S.G., Kaltsoyannis N., Kilcoyne A.L.D., Kozimor, S.A., Shuh, D.K., Tyliczszak, T., Bergman R.G., Arnold, J., *Chem. Sci.*, **2015**, 6, 993-1003.

“Electron Localization in a Mixed-valent Diniobium Benzene Complex”

20. **Nocton G.***, Booth C. H., Maron L., Ricard A., Andersen R. A., *Organometallics*, **2014**, 33, 6819-6829.

“Carbon-Hydrogen Bond Breaking and Making in the Open-Shell Singlet Molecule, Cp*₂Yb(4,7-Me₂phen)”

19. Jacquot L., Xémard M., Clavaguéra C., **Nocton G.***, *Organometallics*, **2014**, 33, 4100-4016.

“Multiple One-electron Transfers in Bipyridine Complexes of Bisphospholyl Thulium”

18. **Nocton G.***, Lukens W. W., Booth C. H., Rozenel S. S., Medling S. A., Maron L. and Andersen R. A., *J. Am. Chem. Soc.*, **2014**, 136, 8626-8641.

“Reversible Sigma C-C Bond Formation Between Phenanthroline Ligands Activated by (C₅Me₅)₂Yb”

17. Cao T-P-A., **Nocton G.**, Ricard L., Le Goff X. F., Auffrant A., *Angew. Chem. Int. Ed.*, **2014**, 53, 1368-1372.

“A Phosphasalen Nickel(III) Complex”

16. **Nocton G.***, Ricard L., *Dalton Trans.*, **2014**, 43 (11), 4380-4387.

“N-Aromatic heterocycles adducts of bulky [1,2,4-(Me₃C)C₅H₂]₂Sm: synthesis, structure and solution analysis”

15. **Nocton G.***, Booth C. H., Maron L., Andersen R. A., **2013**, *Organometallics*, 32, 5305-5312.

“The influence of the Torsion Angle in 3,3'-Dimethyl,2,2'-bipyridine on the Intermediate Valence in (C₅Me₅)₂Yb(3,3'-Me₂-bipy)”

14. Nicolas E., **Nocton G.***, Mézailles N., *Eur. J. Inorg. Chem.*, **2013**, 22-23, 4000-4007.

“CO Activation by Diphosphine-Pt(0): Carbonate and Acetone Formation. Experimental and Mechanistic Study”

13. Gianetti, T.L, **Nocton G.**, Minasian S.G., Tomson, N.C., Kilcoyne A.L.D., Kozimor, S.A., Shuh, D.K., Tyliczszak, T., Bergman R.G., Arnold, J., *J. Am. Chem. Soc.* **2013**, 135, 3224-3236.

“Diniobium Inverted Sandwich Complexes with μ - η^6 : η^6 -arene Ligands: Synthesis, Kinetic of Formation, and Electronic Structure”

12. **Nocton G.**, Booth C. H., Maron L., Andersen R. A., *Organometallics*, **2013**, 32, 1150-1158.

“Thermal Dihydrogen Elimination from Cp*₂Yb(4,5-Diazafluorene)”

11. Halbach, R. L, **Nocton G.**, Andersen R. A., *Dalton Trans.* **2012**, 41, 8809-8812.

“Synthesis and X-Ray Structure of Ruthenium bis(acetylacetonate)(N,N,N',N'-tetramethylethylenediamine)”

10. Vitova T., Kvashnina K., **Nocton G.**, Sukharina G., Denecke M. A., Butorin S. M., Mazzanti M., Cacciuffo R., Soldatov A., Behrends T., and Geckeis H., *Phys. Rev. B*, **2010**, 82.

“High energy resolution X-ray absorption spectroscopy study of uranium in varying valence states”

9. Mougel V., Horeglad P., **Nocton G.**, Pécaut J., Mazzanti M., *Chem. Eur. J.*, **2010**, 16, 48, 14365-14377.

“Cation-cation Complexes of Pentavalent Uranyl: From Disproportionation Intermediates to Stable Clusters”

8. **Nocton G.**, Pécaut J., Filinchuk Y., Mazzanti M., *Chem. Commun.* **2010**, 46, 2757-2759.

“Ligand Assisted Cleavage of Uranium Oxo-Clusters”

7. **Nocton G.**, Horeglad P., Vetere V., Pécaut J., Dubois L., Maldivi P., Edelstein N.M., Mazzanti M., *J. Am. Chem. Soc.* **2010**, 132, 495-508.

“Synthesis, Structure and Bonding of Stable Complexes of Pentavalent Uranyl”

Grégory Nocton, Ph. D

6. Mougel V., Horeglad P., **Nocton G.**, Pécaut J., Mazzanti M., *Angew. Chem. Int. Ed.* **2009**, *48*, 8477-8480. (Inside Cover).
“Stable Pentavalent Uranyl Species and Selective Assembly of a Polymetallic Mixed-Valent Uranyl Complex by Cation-Cation Interactions”
5. **Nocton G.**, Nonat A., Gateau C. and Mazzanti M., *Helvetica Chimica Acta* **2009**, *92*, 2257 (invited issue).
“Water Stability and Luminescence of Lanthanide Complexes of Tripodal Ligands Derived from 1,4,7-triazacyclononane: pyridine carboxamide *versus* picolinate donors”
4. Horeglad P., **Nocton G.**, Filinchuk Y., Pécaut J., Mazzanti M., *Chem. Commun.* **2009**, 1843-1845.
“Pentavalent Uranyl Stabilized by a Dianionic Bulky Tetradentate Ligand”
3. **Nocton G.**, Horeglad P., Pécaut J., Mazzanti M., *J. Am. Chem. Soc.* **2008**, *130*, 16633-16645.
“Polynuclear Cation-Cation Complexes of Pentavalent Uranyl: Relating Stability and Magnetic Properties to Structure”
2. **Nocton G.**, Pécaut J., Mazzanti M., *Angew. Chem. Int. Ed.* **2008**, *47*, 3040-3042 (Inside cover).
“A New Nitrido-Centred Uranium Azido Cluster obtained from a Uranium Azide.”
1. **Nocton G.**, Burdet F., Pécaut J., Mazzanti M., *Angew. Chem. Int. Ed.* **2007**, *43*, 7584.
“Self-Assembly of Polyoxo Clusters and Extended Frameworks by Controlled Hydrolysis of Low Valent Uranium”

Oral presentations (conferences)

14. "The influence of multi-configurational electronic states on the properties and reactivity of organometallics" (Rare Earth Research Conference, *Invited Speaker*, Ames, Iowa, USA, June 2017)
13. Reactivity of Organolanthanides complexes with redox non-innocent ligands." (International Conference of Coordination Chemistry, *Invited Speaker*, Brest, France, July 2016)
12. Electron Transfers in Organolanthanides: new heterometallic complexes" (Coordination Chemistry days, Toulouse, France, January 2016)
11. "Redox Non-Innocent Ligands in Organolanthanides" (International Conference of f-elements, Oxford, UK, September 2015)
10. "Single Electron Transfer(s) in Organolanthanides" (European f-Element Network Meeting, Lisbon, Portugal, April-2015)
9. "Redox Reactions and Single Electron Transfer in Organolanthanides" (GeCom Concord, Vers, France, Mai-2014)
8. "Electron Transfer in Lanthanides Complexes: From Electronic Structure to Reactivity" (European f-Element Network Meeting, Dublin, Ireland, April-2013)
7. "Electron Transfer in Lanthanides Complexes: From Electronic Structure to Reactivity" (French Chemical Society "Coordination chemistry days": Lyon, France, February-2013, best talk award)
6. "N-heterocyclic Amine Complexes of Decamethyltetrabocene: Subtle Perturbations Cause Large Changes in Properties and Reactivity" (Rare Earth Research Conference, Santa Fe, USA, June-2011)
5. "Coordination Chemistry of Pentavalent Uranyl: Structure and Magnetism" (International Conference on f-Elements, Cologne, Germany, August-2009)
4. "Synthesis, Structure and Bonding of Stable Complexes of Pentavalent Uranyl" ("Coordination chemistry in Rhône-Alpes": Lyon, France, April-2009)
- 3 "Synthesis and characterization of polymetallic assemblies of uranium" (French Chemical Society "Coordination chemistry days": Reims, France, January-2009, best talk award)
2. "Actinides polynuclear clusters with cation-cation interactions." (ANKA facilities Users Meeting: Karlsruhe, Germany, October-2008, *invited speaker*)
1. "Redox and Hydrolysis Reactivity of Low-valent Uranium: Synthesis of Polymetallic Complexes of Uranium" (Rhône-Alpes French Chemical Society's "Spring Days": Grenoble, June-2008).

Oral presentations (invited seminars and workshops)

18. "Chimie organométallique des lanthanides et degrés d'oxydation en trompe l'oeil" (*Organolanthanide chemistry and unusual oxidation states*). (Prospectives en chimie, National académie of Science, Paris, January 2018)
17. "Luminescence of divalent and trivalent organometallic complexes of lanthanides" (Lanthanides luminescence workshop, Lyon, May 2017)
16. "The influence of multi-configurational electronic states on the properties and reactivity of organometallics" (ETH Zurich, April 25, 2017)
15. "The influence of multi-configurational electronic states on the properties and reactivity of organometallics" (Georgia Institute of Technology, March 13, 2017)
14. "The influence of multi-configurational electronic states on the properties and reactivity of organometallics" (University of Pennsylvania, March 3, 2017)
13. "NMR at the Ecole polytechnique" (Ecole polytechnique, Palaiseau, February 2017)
12. "Coordination chemistry of divalent lanthanides: electronic structure and guilty ligands!" (ICMMO, Orsay, January 2017)

Grégory Nocton, Ph.D

11. "Coordination chemistry of divalent lanthanides: electronic structure and guilty ligands!" (CPE, Lyon, November **2016**)
10. "Coordination chemistry of divalent lanthanides: electronic structure and guilty ligands!" (Laboratoire de Chimie de Coordination, Toulouse, November **2016**)
9. "Charges Transfers in Coordination Complexes of d- and f- metals" (Charge Transfer Workshop, Orsay, May **2016**)
8. "Magnetic Anisotropy in Organolanthanides" (Magnetic Anisotropy Workshop, Rennes, April **2016**)
7. "Redox Non-Innocent Ligands in Organolanthanides" (French Chemical Society Seminar, Reims, April **2016**)
6. "Redox Non-Innocent Ligands in Organolanthanides" (Institute of separation chemistry, Marcoule, April **2016**)
5. "Le diffractomètre à rayons X sur monocristal : l'X-compagnon incontournable du chimiste" (Journée de la cristallographie à l'X, Ecole polytechnique, October, 21st **2014**)
4. "Redox Reactions and Single Electron Transfer in Organolanthanides" (University of Manchester, Manchester, UK, July 22nd **2014**)
3. "Electron Transfer in Low Valent Complexes of f- and d- block: From Electronic Structure to Reactivity" (CEA Saclay, IRAMIS, July 2nd **2013**)
2. "Redox Chemistry of Lanthanides Complexes: From Electronic Structure to Reactivity" (NTU-X Workshop, Singapore, February-**2012**)
1. "Redox Reactivity and Coordination Chemistry of Uranium" (Arnold Lab seminar, UC Berkeley, USA, April-**2010**)

Posters presentations

10. "Unusual electronic structures and reactivity in organolanthanides" Gordon Research Conference "Inorganic Reaction Mechanism": **2017**, Galveston, TX, USA.
9. "Unusual electronic structures and reactivity in organolanthanides" French Chemical Society "Coordination chemistry days": **2017**, Grenoble, France.
8. " Bipyridine Complexes of Thulium Bisphospholyl: A Step Forward in the Sterically Induced Reduction" European f-Element Network Meeting, EufEN-3, Nüremberg, Germany, April-**2014**.
7. " Sterically Induced Reduction in Organolanthanides. Is there any electronic contribution?" French Chemical Society "Coordination chemistry days": **2014**, Rennes, France.
6. "Electron Transfer Reactions in Organolanthanides Complexes." Gordon Research Conference "Inorganic Chemistry", **2013**, Newport, RI, USA
5. DOE Review, Lawrence Berkeley National Laboratory, Berkeley, USA, **2011**
4. "Polymetallic complexes of uranium obtained from controlled oxidation and hydrolysis of low-valent uranium." Gordon Research Conference "Inorganic Chemistry", **2008**, Newport, RI, USA
3. Graduate School Annual presentation, **2008**, Grenoble, France (Best poster award)
2. "Structural studies of uranium complexes in relation to actinide separation chemistry" Plenary Meeting of ACTINET Network, **2008**, Avignon, France.
1. "Redox chemistry of uranium: a route unusual oxidation state, clusters and extended frameworks." International Karlsruhe Nanoscience Workshop, "Metal Rich Compounds", **2007**, Karlsruhe, Germany.

Science Popularization

5. "La catalyse à la loupe ! Un défi durable pour les chimistes." Tribune, *Le journal des grandes écoles et universités* dossier innovation, levier de développement durable pour la chimie verte (December **2015**).
4. "Maîtriser la chimie, une opportunité contre le réchauffement climatique et la pénurie des énergies fossiles" (Ecole polytechnique, General audience presentation, June, 6th **2015**)

Grégory Nocton, Ph.D

3. “Maîtriser la chimie, une opportunité contre le réchauffement climatique” (Jeudis de l’X, Maison des polytechniciens, Paris, Presentation for scientific journalists, April, 2nd **2015**)
2. “Cristaux de Sucre ou de sel, comment savoir sans les goûter?” (Fête de la Science, november **2014**)
1. “Transformer les gaz atmosphériques polluants, un défi pour les chimistes ” (Fête de la Science, scientific debate amination, november **2014**)

Conferences organization

2. Journée scientifique sur la chimie des terres rares, June, 11th **2015** (member of scientific comity and leader of the organization comity)
1. Journée de la cristallographie à l’X, Ecole polytechnique, October, 21st **2014** (member of scientific comity and organization comity)