

# Curriculum Vitae

## I. Personal Information

Full name: **Tran Dinh Phong**

(PhD *Inorganic Chemistry*, *University of Paris 11, France*)

(HDR *Chemistry*, *University Grenoble Alpes, France*)

Nationality: Vietnamese

Date and Place of birth: 1981, Hai Duong, VIETNAM.

### Current Positions:

Lecturer and Principal Investigator at Department of Fundamental and Applied Sciences, University of Science and Technology of Hanoi, Vietnam

*Expertise:* Inorganic Chemistry, Chemistry of Nanomaterials, Catalysis, Solar Fuels, Energy Conversion and Storage.

*Contact:* [tran-dinh.phong@usth.edu.vn](mailto:tran-dinh.phong@usth.edu.vn); **SMS: 096 46 021 46**



## II. Education

**2016:** Habilitation a Diriger des Recherches (HDR), University Grenoble Alpes, France

**2008:** PhD, University of Paris 11, France.

**2003:** Bachelor of Science, University Scholar Program, Vietnam National University in Hanoi.

## III. Research & Academic Experience

\* **Sept 2017-Aug 2018 (06 months in total):** Visiting Professor at Department of Chemistry, Hanyang University, Korea

\* **July 2015 - Now:** Lecturer and Principal Investigator at University of Science and Technology of Hanoi (USTH, Vietnam France university)

\* **Feb 2011 - June 2015:** Senior Research Fellow at Solar Fuel Laboratory (led by Prof. James Barber from Imperial College London UK) & Energy Research Institute, Nanyang Technological University, Singapore

\* **Jan 2009 - Jan 2011:** Postdoctoral research associate at Prof. Marc Fontecave's lab, CEA-Grenoble, France

\* **Dec 2004 - Dec 2008:** PhD thesis preparation and then postdoctoral research associate, Dr. Pascal Doppelt's lab, CNRS in Paris, France

## IV. Research Funding

\* **2017-2018:** NRF Korea (PI, 30k USD)

\* **2016-2018:** Office of Navy Research Global (Co-PI, 450k USD; PI: Prof Nguyen Quang Liem at IMS, VAST)

- \* **2016-2018**: Vietnam National Foundation for Science and Technology development (Nafosted) (PI, 50k USD)
- \* **2016-2017**: Setup grant from University of Science and Technology of Hanoi (PI, 20k USD)
- \* **2016**: Objectif Labo (granted by French embassy in Hanoi and USTH FR consortium for creating novel competitive research laboratory) (PI, 50k USD)
- \* **2013-20014**: Energy Research Institute @ NTU Singapore and Singapore UC Berkeley Research Initiative for Sustainable Energy (Co-PI, 70k S\$, PI: Prof James Barber)
- \* **2012-2013**: Merlion research project, co-funded by the French embassy in Singapore and the NTU, for initiating research collaboration (Co-PI)

## V. Teaching

- \* **Sept 2017- Aug 2018**: Visiting Professor at Chemistry Department, Hanyang University, Korea  
Undergraduate courses: Organometallic Chemistry and Catalysis (3 ECTS) and Solid State Chemistry (3 ECTS)  
Graduate courses: Organometallic Chemistry of Transition Metals (3 ECTS) and Advanced Solid State Chemistry (3 ECTS)
- \* **July 2015 – to date**: Lecturer at University of Science and Technology of Hanoi, Vietnam  
Master 1 course: Photovoltaic (22.5h, 2 ECTS)  
Master 2 course: Biomimetic Nanomaterials (22.5h, 2ECTS)  
Undergraduate Year 1: General Chemistry (30h, 3ECTS)  
Undergraduate Year 2: Inorganic Chemistry (40h, 4ECTS)  
Undergraduate Year 3: Nanochemistry (30h, 3ECTS) and Materials for Energy Conversion and Storage (30h, 3ECTS)  
*Note: All courses are provided in English*

## VI. Collective activities

- \* **August 2018 – to date**: Co-Director, Direction of Research, Innovation and Technology Transfer, USTH
- \* **March 2018 – to date**: Director, Department of Fundamental and Applied Sciences, USTH
- \* **March 2017 – August 2018**: co-Director, Doctorial School, USTH
- \* **Feb 2017 – to date**: member of Science and Education Council, USTH
- \* **Nov 2015 - Feb 2018**: co-Director, Department of Advanced Materials Science and Nanotechnology, USTH

## V. Others

- + Recipient of Ta Quang Buu 2018 award from the Ministry of Science and Technology
- + Recipient of the best 10 young scientists Golden Globe Award 2016 (Giải thưởng quả cầu vàng khoa học và công nghệ 2016) co-awarded by the Ho Chi Minh Communist Youth Union and

## **Publications in Peer-Reviewed Journals**

47 papers including 01 Nature Materials, 01 Angewandte Chemie International Edition, 04 Energy & Environmental Sciences, 01 ACS Nano.

Total over 3800 citations. H index = 26.

(\*) where I serve as corresponding author

Research account: <https://scholar.google.com/citations?user=kjPZSMUAAAAJ&hl=en>

### **2018**

47. Hoang V. Le, Phong D. Tran, Huy V. Mai, Thuy T.D. Ung, Liem Q. Nguyen, *Gold protective layer decoration and pn homojunction creation as novel strategies to improve photocatalytic activity and stability of the H<sub>2</sub>-evolving copper (I) oxide photocathode*, ***International Journal of Hydrogen Energy***, 2018, 43, 21209-21918

46. Hoang V. Le, Ly T. Le, Ung Thi Dieu Thuy, Phong D. Tran\*, “Current perspectives in engineering of viable hybrid photocathodes for solar hydrogen generation”, ***Advances in natural sciences: Nanoscience and Nanotechnology***, 2018, 9(2), 023001

45. Linh N. Nguyen, Ung Thi Dieu Thuy, Quang Duc Truong, Itaru Honma, Quang Liem Nguyen, Phong D. Tran\*, “Electrodeposited amorphous tungsten-doped cobalt oxide as an efficient catalyst for the oxygen evolution reaction”, ***Chemistry - An Asian Journal***, 2018, 13, 1530-1534

44. Tien D. Tran, Tuyet Mai thi Nguyen, Hoang V. Le, Duc Ngoc Nguyen, Quang Duc Truong, Phong D. Tran\*, “Gold nanoparticle as an outstanding catalyst for the hydrogen evolution reaction”, ***Chemical Communications***, 2018, 54, 3363-3366

43. Quyen T. Nguyen, Phuc D. Nguyen, Duc N. Nguyen, Quang Duc Truong, Tran Thi Kim Chi, Thuy Thi Dieu Ung, Itaru Honma, Nguyen Quang Liem, Phong D. Tran\*, “Novel Amorphous Molybdenum Selenide as an Efficient Catalyst for Hydrogen Evolution Reaction”, ***ACS Applied Materials Interfaces***, 2018, 10, 8659-8665

### **2017**

42. Phuc D Nguyen, Tuan M Duong, Phong D Tran\*, «Current progress and challenges in engineering viable artificial leaf for solar water splitting », ***Journal of Science: Advanced Materials and Devices***, 2017, 2, 399-417

41. Quang Duc Truong, Murukanahally Kempaiah Devaraju, Phong D. Tran, Yoshiyuki Gambe, Keiichiro Nayuki, Yoshikazu Sasaki, and Itaru Honma, «*Unravelling the Surface Structure of MgMn<sub>2</sub>O<sub>4</sub> Cathode Materials for Rechargeable Mg-ion Battery*», *Chemistry of Materials*, **2017**, 29, 6245-6254
40. Souvik Roy, Bhaskar Sharma, Jacques Pecaut, Philippe Simon, Marc Fontecave, Phong D Tran, Etienne Derat, Vincent Artero, «Molecular cobalt complexes with pendant amines for selective electrocatalytic reduction of carbon dioxide to formic acid », *J. Am. Chem. Soc.*, **2017**, 139, 3685–3696
39. Minh N Dang, Thi Dieu Thuy Ung, Hong N Phan, Quang Duc Truong, Thang H Bui, Minh N Phan, Liem Quang Nguyen, Phong D Tran,\* «A Novel Method for Preparation of Molybdenum Disulfide/Graphene Composite », *Materials Letters*, **2017**, 194, 145-148.

## **2016**

38. Duc N. Nguyen, Linh N. Nguyen, Phuc Dinh Nguyen, Tran Viet Thu, Anh Duc Nguyen, Phong D. Tran,\* « *Crystallization of Amorphous Molybdenum Sulfide Induced by Electron or Laser Beam and Its Effect on H<sub>2</sub> Evolving Activities* », *Journal of Physical Chemistry C*, **2016**, 120, 28789-28794
37. Quang Duc Truong, Murukanahally Kempaiah Devaraju, Duc N. Nguyen, Yoshiyuki Gambe, Keiichiro Nayuki, Yoshikazu Sasaki, Phong D. Tran, Itaru Honma, « *Disulfide-Bridged (Mo<sub>3</sub>S<sub>11</sub>) Cluster Polymer: Molecular Dynamics and Application as Electrode Material for a Rechargeable Magnesium Battery* », *NanoLetters*, **2016**, 16, 5829–5835.
36. Phong D. Tran,\* Thu V. Tran, Maylis Orio, Stephane Torelli, Quang Duc Truong, Keiichiro Nayuki, Yoshikazu Sasaki, Sing Yang Chiam, Ren Yi, Itaru Honma, James Barber, Vincent Artero, “*Coordination polymer structure and revisited hydrogen evolution catalytic mechanism for amorphous molybdenum sulfide*”, *Nature Materials*, **2016**, 15, 640-646
35. Tran Ngoc Huan, Reuben T Jane, Anass Benayad, Laure Guetaz, Phong D. Tran, Vincent Artero, “*Bio-inspired Noble Metal-Free Nanomaterials Approaching Platinum Performances for H<sub>2</sub> Evolution and Uptake*”, *Energy Environ. Sci.*, **2016**, 9, 940-947
34. Haiyan Shao, Subas K. Muduli, Phong D. Tran, Han Sen Soo, “*Enhancing Electrocatalytic Hydrogen Evolution by Nickel Salicylaldimine Complexes with Alkali Metal Cations in Aqueous Media*”, *Chem. Commun.*, **2016**, 52, 2948-2951

## **Before USTH**

33. Jian Zhao, Phong D. Tran,\* Yang Chen, Joachim S. C. Loo, James Barber, Zhichuan J. Xu, “*Achieving High Electrocatalytic Efficiency on Copper: A Low-Cost Alternative to Platinum for Hydrogen Generation in Water*”, *ACS Catalysis*, **2015**, 5, 4115-4120

32. Reuben T. Jane, Phong D. Tran, Eugen S. Adreiadis, Jacques Pecaut, Vincent Artero “A simple method for preparation of bio-inspired nickel bisdiphosphine hydrogen evolving catalysts”, *Compte Rendus Chimie*, **2015**, 18, 752-757
31. Yang Chen, Phong D. Tran,\* Pablo Boix, Yi Ren, Sing Y. Chiam, Zhen Li, Kunwu Fu, Lydia H. Wong, James Barber, “Silicon Decorated with Amorphous Cobalt Molybdenum Sulfide Catalyst as an Efficient Photocathode for Solar Hydrogen Generation”, *ACS Nano* **2015**, 9, 3829-3836
30. P. D. Tran, A. Morozan, S. Archambault, J. Heidkamp, P. Chenevier, H. Dau, M. Fontecave, A. Martinent, B. Jusselme, V. Artero “A Noble Metal-Free Proton-Exchange Membrane Fuel Cell based on Bio-inspired Molecular Catalysts”, *Chemical Science*, **2015**, 6, 2050-2053
29. Y. Chen, Phong D. Tran,\* P.P. Boix, P.S. Bassi, N. Yantara, L.H. Wong and J. Barber, “Engineering  $\text{Cu}_2\text{O}/\text{NiO}/\text{Cu}_2\text{MoS}_4$  Hybrid Photocathode for  $\text{H}_2$  Generation in Water”, *Nanoscale*, **2014**, 6, 6506-6510
28. Juan Sun, Sudip K. Batabyal, Phong D. Tran, Lydia H. Wong, “Electrodeposition of single phase  $\text{CuInSe}_2$  for solar energy harvesting: role of different acidic additives”, *Journal of Alloys and Compounds*, **2014**, 591, 127-131
27. Denis Y. W. Yu, Rui Lin Lee, Ren Yi, Sing Yang Chiam, Phong D. Tran, “Electrochemical characterization of novel layered  $\text{Cu}_2\text{MS}_4$  materials for Li-ion batteries ( $M = \text{Mo}$ )”, *Electrochimica Acta*, **2014**, 115, 337-343
26. Phong D. Tran,\* Sing Yang Chiam, Pablo P. Boix, Yi Ren, Stevin S. Pramana, Jennifer Fize, Vincent Artero, James Barber, “Novel Cobalt/Nickel-Tungsten-Sulfide Catalysts for Electrocatalytic Hydrogen Generation from Water”, *Energy & Environmental Sciences*, **2013**, 6, 2452-2459
25. Rui-Lin Lee, Phong D. Tran,\* Stevin S. Pramana, Sing Yang Chiam, Yi Ren, Siyuan Meng, Lydia H. Wong, James Barber, “Assembling graphitic-carbon-nitride with cobalt-oxide-phosphate to construct an efficient hybrid photocatalyst for water splitting application”, *Catalysis Science & Technology*, **2013**, 3, 1694-1698
24. J. Barber, Phong D. Tran, “From Natural to Artificial Photosynthesis”, *Journal of The Royal Society Interface*, **2013**, 10, 20120984. *The Inaugural Headline Review*
23. Pascal Chenevier, Laurent Mugherli, Sunita Darbe, Lea Darchy, Sylvain DiManno, Phong D. Tran, Fabrice Valentino, Marina Iannello, Anne Volbeda, Christine Cavazza, Vincent Artero, “Hydrogenase enzymes: Application in biofuel cells and inspiration for the design of noble-metal free catalysts for  $\text{H}_2$  oxidation », *Comptes Rendus Chimie*, **2013**, 16, 491-505. **Cover paper**
22. Mai Nguyen, Phong D. Tran,\* Stevin S. Pramana, Rui Lin Lee, Sudip K. Batabyal, Nripan Mathews, Lydia H. Wong, Michael Graetzel, “In-situ photo-assisted deposition of  $\text{MoS}_2$  electrocatalyst onto Zinc-Cadmium-Sulphide nanoparticle surface to construct efficient photocatalyst for hydrogen generation”, *Nanoscale*, **2013**, 5, 1479-1482
21. Eugen S. Adreiadis, Pierre-Andre Jacques, Phong D. Tran, Adeline Leyris, Murielle

Chavarot-Kerlidou, Bruno Jousselme, Muriel Matheron, Jacques Pecaut, Serge Palacin, Marc Fontecave, Vincent Artero, “*Molecular engineering of a cobalt-based electrocatalytic nanomaterial for H<sub>2</sub> evolution under fully aqueous conditions*”, *Nature Chemistry*, **2013**, 5, 48-53

20. Lifei Xi, Sing Yang Chiam, Wai Fatt Mak, Phong D. Tran, James Barber, Joachim Say Chye Loo, Lydia Helena Wong, “*A novel strategy for surface treatment on hematite photoanode for efficient water oxidation*”, *Chemical Science*, **2013**, 4, 164-169

19. Phong D. Tran\* Stevin S. Pramana, Vinayak S. Kale, Mai Nguyen, Sing Yang Chiam, Sudip K. Batabyal, Lydia H. Wong, James Barber, Joachim Loo, “*Novel assembly of MoS<sub>2</sub> electrocatalyst onto silicon nanowire array electrode to construct photocathode composed of Earth-abundant elements for Hydrogen generation*”, *Chemistry: A European Journal*, **2012**, 18, 13994-13999

18. Phong D. Tran\* Mai Nguyen, Stevin S. Pramana, Anirban Bhattacharjee, Sing Yang Chiam, Jennifer Fize, Martin J. Field, Vincent Artero, Lydia H. Wong, Joachim Loo, James Barber, “*Copper Molybdenum Sulfide: A New Efficient Electrocatalyst for Hydrogen Production from Water*”, *Energy & Environmental Sciences*, **2012**, 5, 8912-8916

17. Phong D. Tran, J. Barber, “*Proton reduction to hydrogen in biological and chemical systems*”, *Physical Chemistry Chemical Physics*, **2012**, 14, 13772-13784

16. Phong D. Tran\* Lifei Xi, Sudip K. Batabyal, Lydia H. Wong, James Barber, Joachim Loo, “*Enhancing photocatalytic efficiency of TiO<sub>2</sub> nanopowder for H<sub>2</sub> production by using non-noble transition metal co-catalysts*”, *Physical Chemistry Chemical Physics*, **2012**, 14, 11596-11599

15. Lifei Xi, Phong D. Tran, Sing Yang Chia, Saurabh Bassi Prince, Wai Fatt Mak, Hemant Kumar Mulmudi, Sudip K. Batabyal, James Barber, Joachim Say Chye Loo, Lydia H. Wong, “*Co<sub>3</sub>O<sub>4</sub> decorated hematite nanorods as photoanode for solar water oxidation*”, *Journal of Physical Chemistry C*, **2012**, 116, 13884-13889

14. Phong D. Tran\* Sudip K. Batabyal, Stevin S. Pramana, James Barber, Lydia H. Wong, Joachim S. C. Loo, “*A cuprous oxide-reduced graphene oxide (Cu<sub>2</sub>O-rGO) composite photocatalyst for hydrogen generation: employing rGO as an electron acceptor to enhance the photocatalytic activity and stability of Cu<sub>2</sub>O*”, *Nanoscale*, **2012**, 4, 3875-3878

13. Lifei Xi, Prince S. Bassi, Sing Yang Chiam, Mak Wai Fatt, Phong D. Tran, James Barber, Joachim Loo, Lydia H. Wong, “*Surface treatment of hematite photoanodes with zinc acetate for water oxidation*”, *Nanoscale*, **2012**, 4, 4430-4433

12. P. D. Tran\* L. H. Wong, J. Barber, J. S. C. Loo, “*Recent Advances in Hybrid Photocatalysts for Solar Fuel Production*”, *Energy & Environmental Sciences*, **2012**, 5, 5902-5918

11. J. Sun, C. Sun, S. K. Batabyal, P. D. Tran, S. S. Pramana, L. H. Wong, S. G. Mhaisalkar, “*Morphology and stoichiometry control of hierarchical CuInSe<sub>2</sub>/SnO<sub>2</sub> nanostructures by directed electrochemical assembly for solar energy harvesting*”, *Electrochemical Communication*, **2012**, 15, 18-21

10. P. D. Tran, A. Le Goff, J. Heidkamp, B. Jusselme, N. Guillet, S. Palacin, H. Dau, M. Fontecave, V. Artero "Noncovalent Modification of Carbon Nanotubes with Pyrene-Functionalized Nickel Complexes: Carbon Monoxide Tolerant Catalysts for Hydrogen Evolution and Uptake", *Angewandte Chemie International Edition*, **2011**, 50, 1371-1374
9. A. Le Goff, V. Artero, R. Metayé, F. Moggia, B. Jusselme, M. Razavet, P. D. Tran, S. Palacin, M. Fontecave "Immobilization of FeFe hydrogenase mimics onto carbon and gold electrodes by controlled aryldiazonium salt reduction: an electrochemical, XPS and ATR-IR study", *International journal of hydrogen energy*, **2010**, 35, 10790-10796
8. P. D. Tran, V. Artero, M. Fontecave "Water electrolysis and photoelectrolysis on electrodes engineered using Biological and Bio-inspired Molecular Systems", *Energy & Environmental Sciences*, **2010**, 3, 727-747
7. A. Le Goff, V. Artero, B. Jusselme, P. D. Tran, N. Guillet, R. Métayé, A. Fihri, S. Palacin, M. Fontecave "From hydrogenases to noble-metal free catalytic nanomaterials for H<sub>2</sub> production and uptake", *Science*, **2009**, 326, 1384-1387
6. P. D. Tran, A. Allavena-Valette, F. Kamous, P. Doppelt, "Novel valuable fluorine free copper(I) precursors for copper chemical vapour deposition", *Polyhedron*, **2009**, 28, 4091-4095
5. X. T. Le, P. Viel, D. P. Tran, F. Grisotto, S. Palacin, "Surface homogeneity of anion exchange membranes: a chronopotentiometric study in the overlimiting current range", *Journal of Physical Chemistry B*, **2009**, 113, 5829-5836
4. P. D. Tran, M. G. Barthes Labrousse, P. Doppelt, "Iridium CVD using di- $\mu$ -chloro-tetrakis(trifluorophosphine)diiridium (I) precursor: in-situ generated from chloro tetrakis(trifluorophosphine) iridium", *Chemical Vapour Deposition*, **2009**, 15, 320-326
3. R. Dana, I. Kiruscher, P. D. Tran, P. Doppelt, Y. Manassen, "Towards a Dual-Tip STM Application in Mesoscopic Electron Transport", *Israel Journal of Chemistry*, **2008**, 48, 87-97
2. P. D. Tran, P. Doppelt, "Gold CVD using trifluorophosphine gold (I) chloride precursor and its toluene solutions", *Journal of The Electrochemical Society*, **2007**, 154, D520-D525
1. P. D. Tran, P. Doppelt, "Evaluation of a novel fluorine free copper (I) precursor for Cu CVD", *Surface and Coatings Technology*, **2007**, 201, 9066-9070

## Book chapter

1. Phong D. Tran, Marc Fontecave and Vincent Artero, "Electrode materials and artificial photosynthetic systems", **Chapter 14** (pages 385- 410) in "**Bioinspired Catalysis: Metal-Sulfur Complexes**", Edited by Wolfgang Weigand and Philippe Schollhammer, 2015, Wiley-VCH Verlag GmbH & Co. KGaA, Boschstr. 12, 69469 Weinheim, Germany.

## Invited Talks

7. Phong D. Tran, The 9<sup>th</sup> International Workshop in Advanced Materials Science and Nanotechnology, Ninh Binh, Vietnam, 7-11<sup>th</sup> November 2018

6. Phong D. Tran, The International Workshop on Advanced Nanomaterials and Nanotechnology, Hanoi, Vietnam, 14-15<sup>th</sup> August 2017
5. Phong D. Tran, The 3<sup>rd</sup> International Workshop on Nanomaterials for Energy Conversion (NMEC-3), HoChiMinh city, Vietnam, 3-5 May, 2017
4. Phong D. Tran, International Workshop on Advanced Materials Science and Nanotechnology, 3-5<sup>th</sup> November 2016, Hanoi, Vietnam
3. Phong D. Tran, The 5th International Workshop on Nanotechnology and Application - IWNA 2015, 2-4 November 2015, Vung Tau, Vietnam
2. Phong D. Tran, Molecular Catalysis Toward Sustainable Energy, Nanyang Technological University (NTU), Singapore, 25-26 July 2014
1. Phong D. Tran, 3<sup>rd</sup> International Workshop on Natural and Artificial Photosynthesis, NTU, Singapore, 11-14 June 2014

### **Other activities**

Advising 01 postdoc (Dr. Jian Zhao, NTU Singapore), 04 PhD students (Ms. Nguyen Thi Chuc, GUST; Ms. Nguyen Thi Quyen, LCC-Toulouse; Mr. Nguyen Ngoc Duc, USTH; and Mr. Tran Duc Tien, USTH), 03 Master 2 students (Mr. Nguyen Nhu Y, USTH; Mr. Nguyen Ngoc Duc, USTH and Ms. Julie Alvitre, University Toulouse Paul Sabatier), 02 Master 1 students (Mr. Nguyen Nhat Linh, USTH and Mr. Emmanuel Adetola, USTH), 02 Research Assistance (Ms. Rui-Lin Lee, NTU Singapore and Ms. Nguyen Thi Quyen, USTH).