

**Dr. NASSER THALLAJ**  
**PhD in Chemical Sciences**  
**Member of American Chemical Society (ACS)**  
**Born in dier azzor, October 27th 1970**  
E-mails: [nasserthallaj@hotmail.com](mailto:nasserthallaj@hotmail.com)

- 2015-2017: Associate professor position. Faculty of pharmacy, Syrian Private University, Damascus, Syria
- 2015-2016: Consultant in Ugarit Education Group: foundation of AlManara University.
- 2014-2015: vice president for scientific affairs (in charge), University of Kalamoon, Dier Attieh, Syria.
- 2014-2015: In charge of higher education affairs, University of Kalamoon, Dier Attieh, Syria.
- 2012-2014: Dean of Faculty of applied Sciences, University of Kalamoon. Dier Attieh, Syria.
- 2010-2013: Head of Department of Chemistry. Faculty of applied Sciences, University of Kalamoon. Dier Attieh, Syria
- 2008: Associate professor position. Faculty of applied Sciences, University of Kalamoon. Dier Attieh, Syria
- 2008 : Post-Doctoral position. *Laboratory of Organic Chemistry of Supramolecular Materials*, Department of Chemistry. University Notre Dame de la Paix. Namur, Belgium.

#### **ACADEMIC STUDIES**

-2007: PhD in Chemical Sciences, *Laboratory of Biomimetic chemistry for transition metals*, Louis Pasteur University, Strasbourg, France.

**Thesis Title:** Ligands tris(2-pyridylméthyle)amine  $\alpha$ -substitués et complexes dichloroferreux: une diversité préfigurant une possible utilisation du dioxygène en conditions douces.

**PhD supervisor:** Dr. Dominique Mandon.

**-2003: Master's of Science (M.S. Degree) in Transition Metals Chemistry and Molecular Engineering. *Laboratory of Organometallic Chemistry and Catalysis. Louis Pasteur University, Strasbourg, France.***

**Thesis Title:** Fonctionnalisation de Ligands de type Tris(2-pyridylméthyle)amine. Études des complexes Dichloroferreux.

**Thesis supervisor:** Dr. Dominique Mandon.

**-2001: Higher Studies Diploma in Applied Chemistry, Department of Chemistry, Damascus University, Damascus, Syria.**

**Thesis Topic:** Alkyl poly Glucosid (APG) synthesis and esterification reactions.

**-1998: Bachelor Degree (B.S) in Applied Chemistry. Department of Chemistry, faculty of sciences, Damascus University, Syria.**

## **HIGHLIGHTS**

A broad-based experience in synthesis and characterization of organic and organo-metallic compounds. Multiple-step organic and organometallic synthesis. Carbohydrate Chemistry, Microwave synthesis, Solid phase synthesis, Enantioselective synthesis, Homogenous catalysis, Synthetic techniques including working on a Schlenck line, through a glovebox and in a clean rooms. Crystallogenesis experience especially in growing single crystals under inert conditions. Characterization of organic products and organometallic complexes by a variety of NMR techniques ( $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{31}\text{P}$ ,  $^{15}\text{N}$ ,  $^{19}\text{F}$ ) 1D and 2D,  $^1\text{H}$ NMR, FT-IR spectroscopy, UV-Visible-NIR spectroscopy, variable temperatures, Mass spectrometry, electrochemistry (conductimetry, cyclic voltammetry), chromatography techniques, including column, TLC preparative, GC, GC mass and HPLC chromatography.

## **RELEVANT EXPERIENCE**

### **1-Teaching experience**

**From 2008 to the present time:** Associate professor position. Department of Chemistry. University of Kalamoon.

Theoretical and practical courses of General and Organic Chemistry for Medicine, Pharmacy and Nutrition faculties.

*Elected the best professor by students of the university for 2 successive years (2009 and 2010).*

### **2- Trainings:**

**2003-2004:** One-year training. Institute for Science and Supramolecular Engineering. Louis Pasteur University, Strasbourg, France.

**Area of Research:** Medicinal and Pharmaceutical chemistry, Sugar Chemistry: New methods in Glycosilation for preparation of GP120.

**2002:** One-year training. Laboratory of Organometallic Chemistry and Catalysis, Louis Pasteur University, Strasbourg, France.

**Area of Research:** Organic ligands preparation.

**1997-1998:** One- year of practical and hands-on experience in organic synthesis, polystyrene and ionic exchange resins. Damascus University, Damascus, Syria.

### **3-Student's supervising:**

*Supervising a number of students at the both the B.S and M.S levels, overseeing day-to-day formulations, synthesis and analysis in the fields of molecular, organic and bio-organic Chemistries.*

**2007:** Supervising Juliette Przybilla student in Master II Degree in Molecular and Supramolecular Chemistry. Department of Chemistry. Louis Pasteur University. Strasbourg.

**Thesis title:** « Hydratation biomimétique des nitriles dans des complexes ferreux à ligands aminométhylepyridine cyanés ».

**-2006:** Supervising Juliette Przybilla, student in Master I Degree in Molecular and Supramolecular Chemistry. Department of Chemistry. Louis Pasteur University. Strasbourg.

**Thesis title:** « Synthèse et structure de ligands tris(2-pyridylméthyle)amine cyanés et préparation des complexes dichloroferreux correspondants. »

**-2005:** Supervising Alexandre Murza, student in Master Degree in Chemistry. Department of Chemistry. Louis Pasteur University. Strasbourg.

**Thesis title:** « Réactivité de l'oxygène moléculaire sur des complexes ferreux avec des ligands présentant le motif tris-(2-pyridylmethyl)amine fluoré. »

**-2005:** Supervising for Juliette Przybilla, student in Licence Degree of Chemistry. Department of Chemistry. Louis Pasteur University. Strasbourg.

**Thesis title:** « Complexation des ligands présentant le motif tris-(2-pyridylmethyl)amine fluorés avec différents sels de  $\text{Fe}^{\text{II}}$  ».

## **SCIENTIFIC PRODUCTION**

### ***1-Selected Publications***

**- N. K. Thallaj, 2017. Damascus University Journal for Basic Sciences.** Conjugation of Riboflavin to TPAs Ligands with two halogens atoms in  $\alpha$ -position substitution. *in press*.

- **N. K. Thallaj, Journal of AlBaath University (39) 2017.** Designing and synthesis of DPAs ligands to induce structural modification of Riboflavin
- N. K. Thallaj, Tishreen University Journal for Research and Scientific Studies 38 (6) 2016.** Ferrous complexes with aromatic  $\alpha$ -substituted tris(2-pyridylmethyl)amine ligands: effect of the substituents and biomimetic reactivity.
- **N. K. Thallaj, P.Y. Orain, A. Thibon, M. Sandroni, R. Welter and D. Mandon, Inorg. Chem. 2014, 53 (15), 7824-7836.** Steric Congestion at, and Proximity to, a Ferrous Center Leads to Hydration of  $\alpha$ -Nitrile Substituents Forming Coordinated Carboxamides.
- N. K. Thallaj, A. Machkour, D. Mandon and R. Welter, New J. Chem., 2005, 29, 1555–1558.** Square pyramidal geometry around the metal and tridentate coordination mode of the tripod in the [6-(3'-cyanophenyl)-2-pyridylmethyl]bis(2-pyridylmethyl)amine FeCl<sub>2</sub> complex: a solid state effect.
- Machkour, **N. K. Thallaj, L. Benhamou, M. Lachkar and D. Mandon, Chem. Eur. J., 2006, 12, 6660 – 6668.** The Coordination Chemistry of FeCl<sub>3</sub> and FeCl<sub>2</sub> to Bis[2-(2,3-dihydroxyphenyl)-6-pyridylmethyl](2-pyridylmethyl)amine: Access to a Diiron(III) Compound with an Unusual Pentagonal-Bipyramidal/Square-Pyramidal Environment.
- **N. K. Thallaj, D. Mandon and K. A. White, Eur. J. of Inorg. Chem., 2007, 44–47.** The Design of Metal Chelates with a Biologically Related Redox-Active Part: Conjugation of Riboflavin to Bis(2-pyridylmethyl)amine Ligand and Preparation of a Ferric Complex.
- **N. K. Thallaj, J. Przybilla, R. Welter and D. Mandon, J. Am. Chem. Soc. 2008, 130, 2414–2415.** A ferrous centre as reaction site for hydration of a nitrile group into a carboxamide in mild conditions.
- **N. K. Thallaj, O. Rotthaus, L. Benhamou, N. Humbert, M. Elhabiri, M. Lachkar, R. Welter, A.M. Albrecht-Gary, and D. Mandon, Chem. Eur. J. 2008, 14(22) 6742-6753.** Reactivity of molecular dioxygen towards a series of isostructural dichloroiron (III) complex with tripodal tetraamine ligands: general access to  $\mu$ -oxo-diiron (III) complexes and effect of alpha fluorination on the reaction kinetics.
- A. Wane, N. K. Thallaj, and D. Mandon Chem. Eur. J. 2009, 15, 10593 -10602.** Biomimetic Interaction between Fe<sup>II</sup> and O<sub>2</sub>: Effect of the Second Coordination Sphere on O<sub>2</sub> Binding to Fe<sup>II</sup> Complexes: Evidence of Coordination at the Metal Centre by a Dissociative Mechanism in the Formation of  $\mu$ -oxo Diferric Complexes.
- **N. K. Thallaj, D. Mandon, and R. Welter, 2010.** The hydration of nitrile in  $\alpha$ - nitriles substituted tris(2-pyridylmethyl)amine by dichloroferrous complexes produce after the

oxydation compound with an unusual  $\mu$ -oxo, binuclear seven coordination. (*under preparation*).

## **2-Communications in Meetings**

### **A-Speeches**

- N. K. Thallaj, A. Machkour, D. Mandon, K. A. White and R. Welter. **GECOM-CONCOORD 2005**. 5-10 June 2005, Autrans. France. **Title:** Chlorure ferreux, ligands tripodes en série tris(2-pyridylméthyle)amine et activation biomimétique du dioxygène : chimie de coordination et complexes à ligands fonctionnalisés.

- D. Mandon, N. K. Thallaj and A. Machkour. **Second Symposium Franco-Japonais "Dioxygen Activation Catalyzed by Metalloenzymes and Model compounds 2005**. 20 and 21 June 2005, University René Descartes, Paris, France. **Title:** Versatile biomimetic reactivity of molecular dioxygen upon reaction with ferrous complexes with substituted aminomethylpyridyl ligands

*This communication has been also presented in the 8th FIGIPAS Meeting in Inorganic Chemistry, Athens, Greece, 6-9 July 2005.*

- N.K. Thallaj, L. Benhamou, J. Przybilla, M. Lachkar and D. Mandon. **Réunion annuelle du Club Métalloprotéines et Modèles & Groupe thématique "Métalloprotéines" de la Société Française de Biochimie et Biologie Moléculaire 2006**. 15-18 October 2006, Aussois, France.

**Title:** Que faire de biomimétique avec : 1) des complexes dichloroferreux à ligands aminométhylpyridine et 2) du dioxygène ? Rôle de l'acidité de Lewis du métal dans la coordination de O<sub>2</sub>, et transformation catalytique du cyclohexane en cyclohexanone.

- L. Benhamou, N. K. Thallaj, O. Rotthaus, D. Mandon, M. Lachkar and R. Welter. **Conférence Internationale sur la Chimie Organométallique et de Catalyse, Université Moulay Ismaïl 2007**. 3 and 4 May 2007, Meknès, Maroc. **Title:** Activation and Biomimetic Use of Dioxygen by Ferrous Complexes with Aminomethylpyridyl-Containing Ligands.

### **B-Posters**

- N. K. Thallaj, L. Benhamou, A. Machkour, A. Murza, D. Mandon, M. Lachkar, R. Welter. **Réunion annuelle du Club Métalloprotéines et Modèles & Groupe thématique "Métalloprotéines" de la Société Française de Biochimie et Biologie Moléculaire 2005**. 2-5 October 2005, Carry-le-Rouet, France. **Title:** Oxygène moléculaire et complexes ferreux à ligands aminométhyle pyridine: à la recherche du biomimétisme en chimie non porphyrinique.

- N.K. Thallaj, L. Benhamou, J. Przybilla, M. Lachkar, D. Mandon. **Second International Meeting of the Institute of Metals in Biology of Grenoble 2006**. 24-27 September 2006, Autrans, France. **Title:** Molecular dioxygen and mononuclear ferrous complexes with  $\alpha$ -substituted tris(2-pyridylmethyl)amine ligands: effect of the substituents and biomimetic reactivity?

*This poster has been also presented in the annual meeting of Club Métalloprotéines et Modèles & Groupe thématique "Métalloprotéines" de la Société Française de Biochimie et Biologie Moléculaire, 15-18 October 2006, Aussois, France.*

- **N.K. Thallaj**, J. Przybilla, L. Benhamou, D. Mandon. *Second International Meeting of the Institute of Metals in Biology of Grenoble 2006*. 24-27 September 2006, Autrans, France. **Title:** The preparation of dichloroferrous complexes with electron-deficient,  $\alpha$ -substituted tris(2-pyridylmethyl)amine ligands, and their reactivity versus molecular dioxygen.

*This poster has been also presented in the annual meeting of Club Métalloprotéines et Modèles & Groupe thématique "Métalloprotéines" de la Société Française de Biochimie et Biologie Moléculaire, 15-18 October 2006, Aussois, France.*

- **N. K. Thallaj**, L. Benhamou, O. Rotthaus, D. Mandon, M. Lachkar and R. Welter. *13th International Conference on Bio-Inorganic Chemistry 2007*. 15-20 July 2007 Vienna, Austria. **Title:** Lewis acidity at the metal center and dioxygen activation: Substitution at the  $\alpha$  position within the series of tris(2-pyridylmethyl)amine ligands dramatically affects the reactivity of  $\text{FeCl}_2$  on molecular dioxygen.

#### **COMPUTER KNOWLEDGE**

Several chemical programs (CS ChemDraw 2D and 3D, ISIS Draw), Microsoft office, Photoshop, Spartan, Mercury, Ortep, MestRec, NMR notebook, win NMR , UV-Visible programs, Chromatographic programs (HPLC, GC, GC mass).

*Military service accomplished.*