

# Self-Assembled Luminescent Structures of Au(I) and Pt(II) Complexes

**Prof. Laura Rodríguez Raurell**

Catedrática de Universidad

Facultad de Química de la Universidad de Barcelona

Jueves, 17 de octubre 2024

12:00h

Sala de grados Edif. Físicas (Facultad Ciencias)

**CICLO CONFERENCIAS ISQCH 2024**

**isqch**

Instituto de Síntesis Química y Catálisis Homogénea

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# Self-Assembled Luminescent Structures of Au(I) and Pt(II) Complexes

Laura Rodríguez

<sup>1</sup> Inorganic Chemistry Section, Faculty of Chemistry, Universitat de Barcelona. Martí i Franquès, 1-11. 08028 Barcelona (Spain). email: laurarodriguezr@ub.edu

Au(I) and Pt(II) compounds are of great relevance from different points of view. They present, in general, linear geometries in the case of Au(I) and square planar for Pt(II) derivatives. Their properties are driven by the organic ligands coordinated to the metal and by the possible establishment of weak intra- or intermolecular contacts.

Having this in mind, in our research group we are focused on the design and synthesis of the suitable organic ligands that can be monodentate (in the case of Au(I) derivatives) or monodentate + tridentate (in the case of Pt(II) complexes) and their coordination to the corresponding metal atom. We analyze the resulting luminescent properties and their applications in the fields of supramolecular chemistry, luminescent materials, singlet oxygen production, sensing or biological activity among others. These properties can be modulated and affected by the formation of supramolecular interactions. Interestingly, we can modulate the possible assemblies to obtain structures with different sizes and shapes, what is a challenge for the supramolecular chemistry community and even more, trying to have a control on it.[1] On the other hand, when our molecules present a chromophore, we can also tune the resulting colors and emission intensities that come from the aggregation.[2]

In the last years, we are also focused on the development of phosphorescence emitters that emit this type of emission at room temperature.[3] This is an important challenge from different type of applications such as in OLED devices.

## References:

- [1] a) G. Romo-Islas, *Inorg. Chem. Front.*, **2023**, 10, 6204; b) A. Pinto et al. *Inorg. Chem. Front.*, **2022**, 9, 6047; c) a) E. Aguiló et al. *Inorg. Chem.*, **2018**, 57, 1017.
- [2] a) A. Pinto, et al. *Dalton Trans.*, **2017**, 46, 11125; b) A. Lazaro et al. *Inorg. Chem.* **2023**, 62, 2000; c) A Pinto et al. *Inorg. Chem.* **2023**, 62, 7131.
- [3]; a) A. Lázaro et al. *Inorg. Chem.* **2020**, 59, 8220; b) A. de Aquino et al. *Chem. Eur. J.* **2021**, 27, 1810; c) A. de Aquino et al. *Inorg. Chem.* **2022**, 61, 20931; d) A. de Aquino et al. *Dalton Trans.*, **2022**, 51, 16282; e) A. Lázaro et al. *Inorg. Chem.* **2023**, 62, 2000; f) G. Romo-Islas et al. *Inorg. Chem.* **2023**, 62, 8101



**Prof. Laura Rodríguez**

<https://www.groupsuns.com/>

I started my research career with my PhD in Chemistry (defended in 2003) carried out at the Inorganic Chemistry Department (Faculty of Chemistry – UB). The topic of my PhD was Metallic Clusters and Supramolecular Chemistry where I introduced the Supramolecular Chemistry research line in the Department. During this period, I performed a scientific research stage at the Universidade Nova de Lisboa to gain some knowledge on luminescence and photophysical characterization and I introduced also this research topic at the Department. I carried out my postdoc at the same University during ca. 30 months to gain deeper knowledge on this field in 2006 and I came back at the University of Barcelona in 2008 as Lecturer Professor. Then, in 2013 I got a permanent position as Associate Professor and as Full Professor in 2020.

When I came back in Barcelona, I started a new research line based on Supramolecular organometallic luminescent systems with applications in different fields (gels formation, luminescent materials, molecular recognition, materials chemistry, biological activity and photocatalysis) but always based on the analysis of the supramolecular assemblies and their effect on the resulting luminescent properties. From 2015 I am the head of the research group “Supra- and Nanostructured systems” (<https://www.groupsuns.com/>) at the Inorganic Section – Faculty of Chemistry (UB) and I have been PI in the Spanish National Project calls in three consecutive calls, since the foundation of my group.

Chair of the recently successful COST Action: Luminescent Chemosensors for Environmental Security (LUCES).

During 2018-2020 I was PI of an agreement with the Samsung Electronics Company, with a focus on developing room temperature phosphorescent emitters for OLED applications, being a great opportunity to contact with the transfer of knowledge and building a bridge between fundamental and applied research.

Around 110 publications included in the SCI and ca. 45 of them have been published in the last 5 years (2019-2023). ORCID: 0000-0003-1289-1587.

I have collaborations with several groups at national and international level, all of them with common interests on Supramolecular Chemistry, organometallic chemistry and/or luminescence. I am also involved in other ongoing networks: an international network with France (Hetero-elements and coordination chemistry: from concept to applications-HC3A”), and the national networks “*Materiales Supramoleculares Funcionales* - RED2018-102331-T” and “*Organometallic Chemistry for Sustainable Solutions* - RED2022-134074-T”.

My scientific achievements have been recognized on several invitations to deliver lectures on national and international conferences and contribution with oral communications (ca. 60 in total) and research centres and Universities (ca. 15). And, since 2022, I am member of the Management Team of the Spanish Royal Society of Chemistry (RSEQ).

I have been taking part as organizer or as Chair of several national or international conferences: 3<sup>rd</sup> SUPRAPHONE Meeting-2006, MOLMAT 2012, 1<sup>st</sup> International Symposium on Functional Metals that bind to biomolecules- 2013, Symposium S1- bienal RSEQ – 2015, II workshop on 11 group elements – 2017, GEQO-RSEQ 2022, Symposium S11 bienal RSEQ Granada 2022 and S4 in the bienal RSEQ Zaragoza 2023 and 4<sup>th</sup> HC3A workshop 2022.

All these projects have been possible to be fruitful thanks to the supervision of several students at different levels (6 PhD, 3 postdocs and several masters and final degree project students).

A part from research, as a professor, I am also committed to teaching and management that are the three pillars of a University professor. I teach at different levels, at different degrees and in different languages.

I am also involved in management of the Faculty since I was secretary of the Inorganic Department from 2011-2016 and in vice-dean in charge of Professors’ contracts and Security from 2017-2020.