**INTRODUCTION**

Many mononuclear Iridium (III) complexes have been studied over the last decade thanks to their great photophysical and physicochemical properties: high photoluminescence quantum yields, lifetimes ranging from hundreds of nanoseconds to microseconds, emission from blue to red and their enhanced thermal and chemical stabilities. Such properties make these Iridium complexes very useful within visual display applications such as light-emitting electrochemical cells (LEECs) or Organic Light-Emitting Diodes (OLEDs).

Dinuclear Iridium complexes are a far less explored category of luminescent materials. Dinuclear complexes wherein the two metals are electronically coupled are of particular interest as in these cases, new charge transfer states can be accessed, leading to potentially improved properties. Within this context, this poster presents our work on dinuclear assemblies incorporating the 2,5-di-(2-pyridyl)pyrazine ligand (dpp) and compare them with mononuclear model systems. DFT/TDDFT calculations along with electrochemical and photophysical studies are highlighted.

**SYNTHESIS**

In the literature:

- 2. J. Am. Chem. Soc. 1939, 61, 905-905

**PHOTOPHYSICAL DATA of A**

<table>
<thead>
<tr>
<th>Absorbance 200 K (nm)</th>
<th>Emission 300 K (nm)</th>
<th>Lifetimes (ns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>252 (6372); 290 (4428); 314 (4110); 375 (1305); 400 (128)</td>
<td>208 K (191)</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>4.0</td>
<td>537 (54%)</td>
</tr>
</tbody>
</table>

**CALCULATIONS**

**CONCLUSION AND FUTURE WORK**

The computations indicate that the dinuclear complexes are significantly red-shifted in their absorption and emission compared to their mononuclear counterparts. The synthesis and the characterization of the mononuclear complex ([ppy]2 Ir(dpp))] (PF6) have been achieved successfully.

We will now focus on the synthesis of the other complexes to complete the study.

Finally, we plan to design a non-symmetrical dinuclear complex bearing two different cyclometallating ligands to see the effect on the nature of the charge transfer between metal centers, and how that impacts the photophysical properties.