

NON-KASHA PHOSPHORESCENCE: THE ROLE OF AZULENE AND CARBAZOLE



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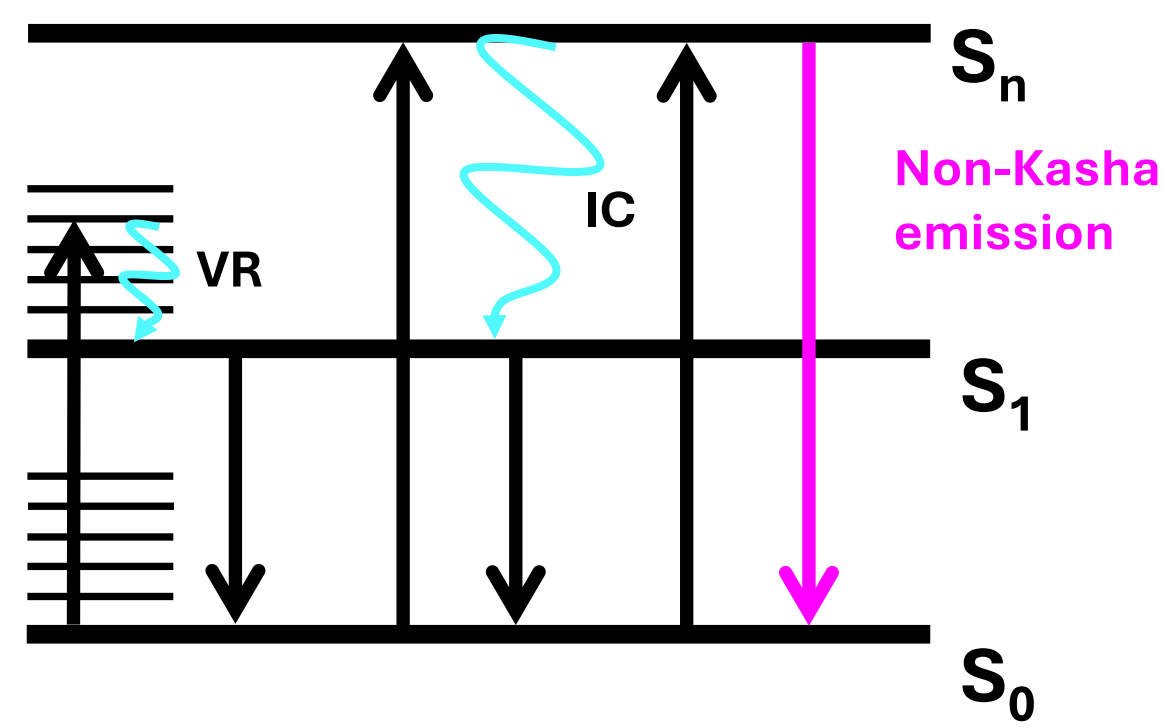
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WHY STUDY AZULENE-BASED MOLECULES?

According to the **Kasha photoemission rule**: "the emitting electronic level of a given multiplicity is the lowest excited level of that multiplicity"



Azulene and derivatives have the ability to **violate this rule!!**

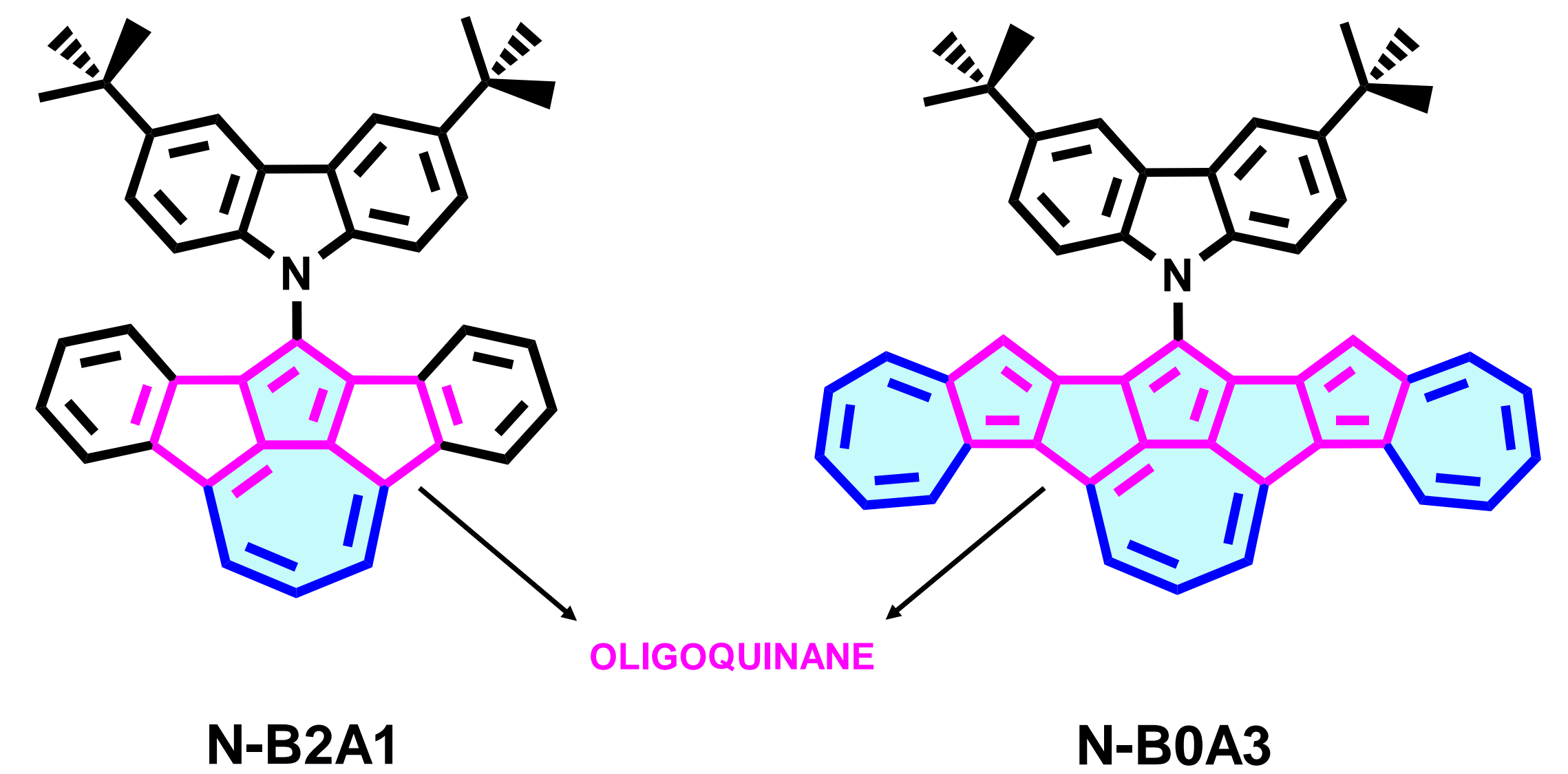
New chemistry and new applications in constructing **new molecular materials**.

On top of that:
- Its **permanent dipolar moment and reactivity**

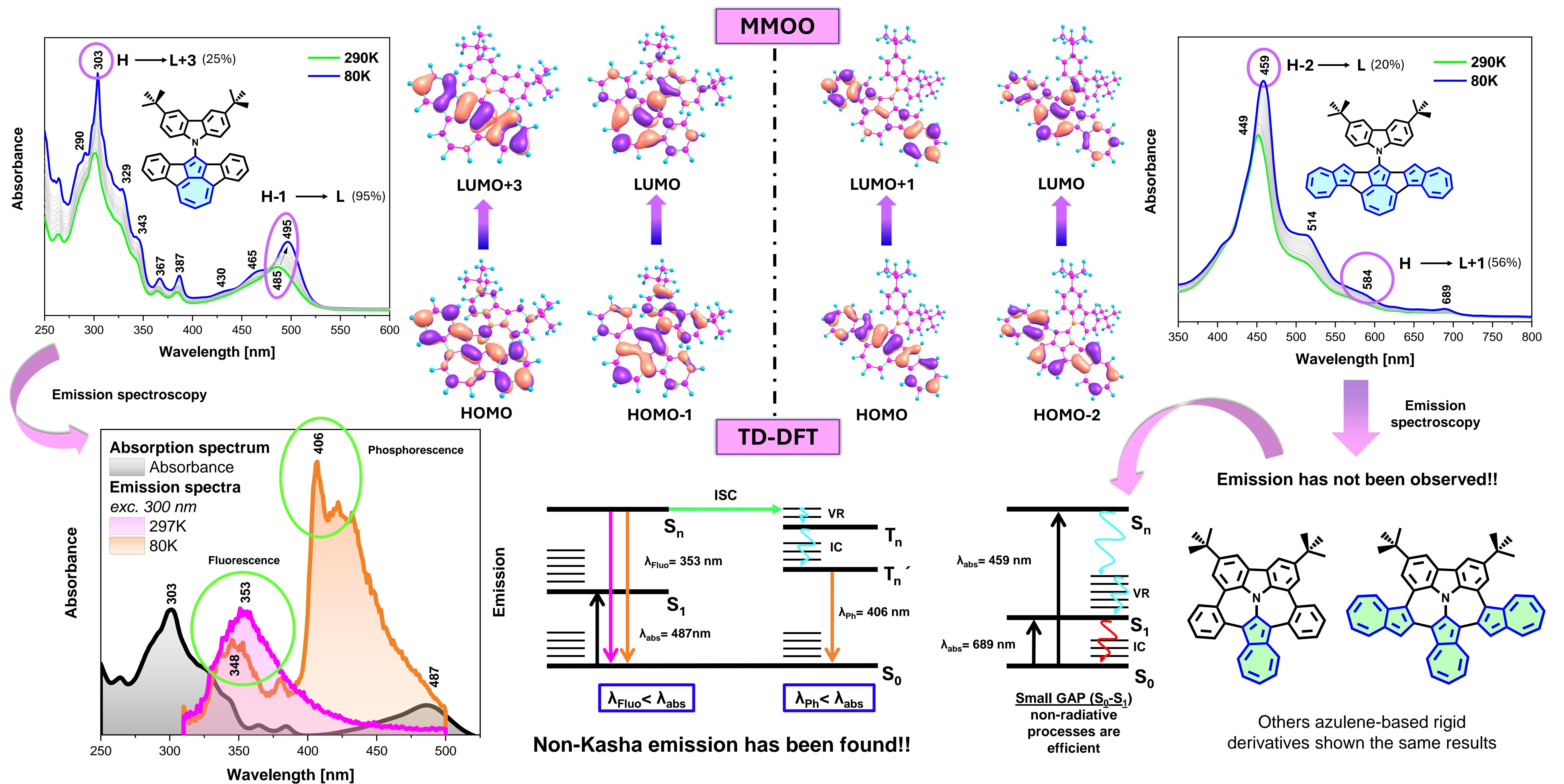
Tailored-azulene derivatives are promising candidates for...

WHAT IS THE AIM OF THIS STUDY?

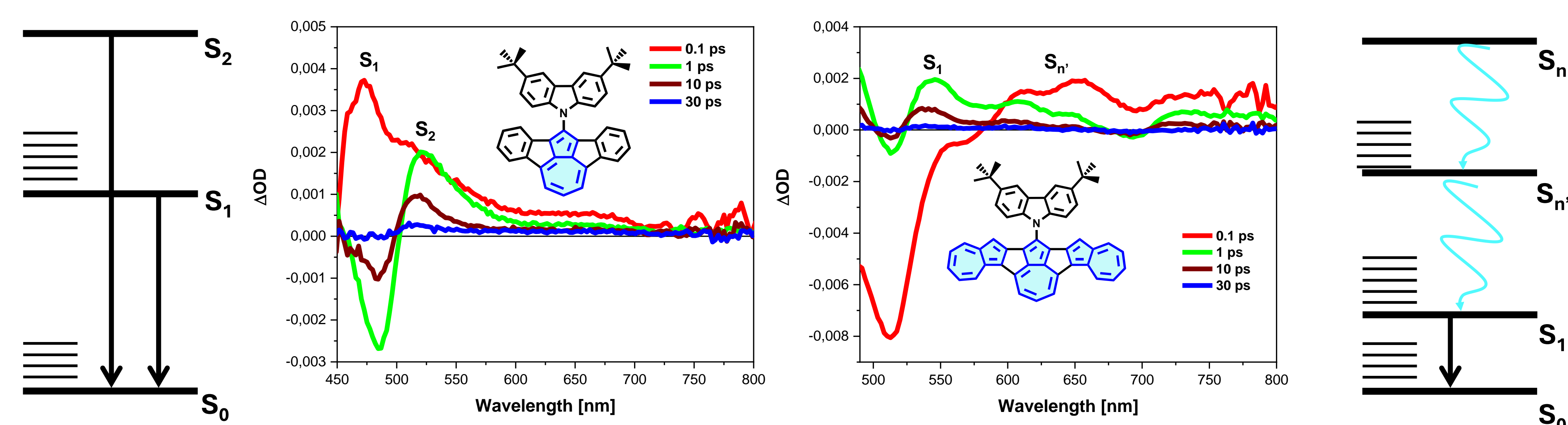
- To explore new properties in new azulene-based molecules.
- To clarify the structure-property relationships of non-Kasha emission.



ELECTRONIC STRUCTURE CHARACTERISATION



TRANSIENT ABSORPTION SPECTROSCOPY



CONCLUSIONS

- We have characterised two azulene-based molecules that show non-Kasha emission (fluorescence and phosphorescence).
- These results have been compared with another previously studied rigid azulene-based derivatives.
- We deduce a relationship between non-kasha emissions and azulene-carbazole moieties.

[1] Wang, J., Gámez, F. G., Marín-Beloqui, J., Díaz-Andres, A., Miao, X., Casanova, D., Casado, J., & Liu, J. (2023). *Angewandte Chemie International Edition*, 62(10), e202217124.

[2] Díaz-Andres, A., Marín-Beloqui, J., Wang, J., Liu, J., Casado, J., & Casanova, D. (2023). *Chemical Science*, 14(23), 6420-6429.



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