

AMYC  
BIOMED  
2025

**Book of Abstract**  
**AMYC-BIOMED 2025**  
**6<sup>th</sup> Edition - Summer Edition**



Palermo, Addaura Village Hotel, 23-25 June 2025

# Fluorinated oxadiazoles as potential scaffolds for biomaterials

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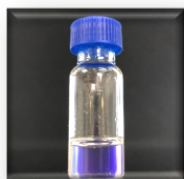
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**Keywords:** fluorinated molecules, oxadiazole, supramolecular gel, photonic liquids.

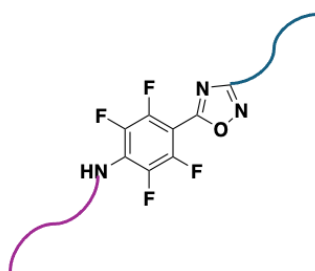
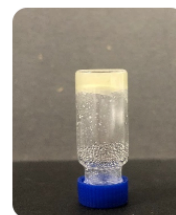
Photonic liquids and gels have been widely used in several application fields among which biomedical applications, thanks to their intermediate behaviour between solid and liquid. [1,2]

The research of new chemical scaffolds able to self-assemble, hence giving rise to smart materials is still challenging. For example, a class of fluorophenyl-oxadiazoles has been proved to behave as organogelator while several fluorinated triazole salts showed ionic liquid crystals properties. [3,4] in this framework, 1,2,4-oxadiazole bearing fluorinated moiety was used as core for the synthesis of new class of molecules taking advantage from its great tunability.

## Photonic liquids



## Supramolecular gels



 = alkyl or fluoroalkyl chain

 = alkyl chain; benzyl group; aminoacids' esters

Scheme 1: Fluorophenyl-1,2,4-oxadiazole based molecules behaving as fluorescent liquid crystals or supramolecular gels in dependence of the substituents.

Fluorophenyl-1,2,4-oxadiazoles based molecules differing for substituents on phenyl ring (aliphatic, aromatic or aminoacid derivatives) and on heterocycle (fluorinated or alkyl chain) were synthesized and studied as potential molecules for self-assembly. Chemical-physical properties of the compounds were drastically influenced by structural modification on the core, behaving as photonic liquids or as organogelators. Both type of materials can be of great interest for biomedical applications.

## References

- [1] W.-Q. Ding, H. Liu, S.-Y. Qin, Y. Jiang, X. Lei, and A.-Q. Zhang, *ACS Appl. Bio Mater.* 2020, 3, 8989–8996.
- [2] C. Rizzo, P. Cancemi, L. Mattiello, S. Marullo, and F. D'Anna *ACS Appl. Mater. Interfaces* 2020, 12, 48442–48457.
- [3] A. Palumbo Piccionello, A. Guarcello, A. Calabrese, I. Pibiri, A. Pace, S. Buscemi, *Org. Biomol Chem.*, 2012, 10, 3044–3052.
- [4] A. Riccobono, R. R. Parker, A. C. Whitwood, J. M. Slattery, D. W. Bruce, I. Pibiri and A. Pace, *Chem. Commun.*, 2018, 54, 9965–9968.