



UNIVERSITÀ  
DEGLI STUDI  
DI PADOVA

## **PhotoDAD - Rational design and synthesis of new sulfur-based organic photocatalysts (S-OPCs) and their application in the synthesis of value-added products**

In my research project PhotoDAD, I create a new family of highly reductive sulfur-based organic photocatalyst (S-OPC) which will open to new chemical reactivity for the synthesis of value-added products, using light as a sustainable energy source. The key features of the PhotoDAD project are: i) the synthesis of novel S-OPC based on a rational design using cyclic voltammetry and DFT studies to ensure the planned reductive characteristics, and ii) their use in  $\alpha$ - and  $\beta$ - fluorination of captodatives bonds present in dehydroalanines and dehydropyrimidinones. These substrates will have a broad structural diversity that will allow access to biorelevant fluorinated unnatural amino acids and antiretroviral DPC-083 analogues. The new S-OPC-assisted fluorination protocol will be implemented also for the late-stage functionalization of more complex molecules such as Avagacestat.