The post doc will work in the activity of research project entitled: “Heterogeneous electrophotocatalysis by iridium(III) complexes for greener organic syntheses” (PRIN 2022 Codice: 2022HX5CHP). The activity will involve: 1) the synthesis of electrophotocatalysts and their characterization; 2) their use as electrophotocatalysts both in homogenous and heterogeneous phase.

This first acticvity will deal with the synthesis of cyclometalated iridium(III) complexes by testing several classes of complexes (i.e., cationic, neutral and anionic), different types of cyclometalated and ancillary ligands and by modifying the ligands with different substituents to fine tune the properties of the final complexes. The target catalysts will be characterized to experimentally evaluate their photophysical, electrochemical and electrophotochemical properties.

The second activity will concern the use of the most promising Ir (III) complexes as components of the homogeneous electrophotocatalytic system applied to reduction reactions such as aromatic dehalofunctionalization, reductive trifluoromethylation of olefins and electron poor heteroaromatic. Morevoer, this activity will aim to explore the immobilization of the best electrophotocatalysts onto a conductive substrate to produce a chemically modified photocathode. The immobilization can take place before or after the modification of conductive surface.