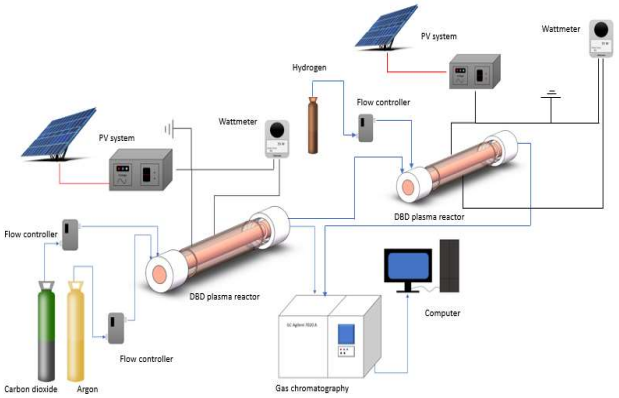
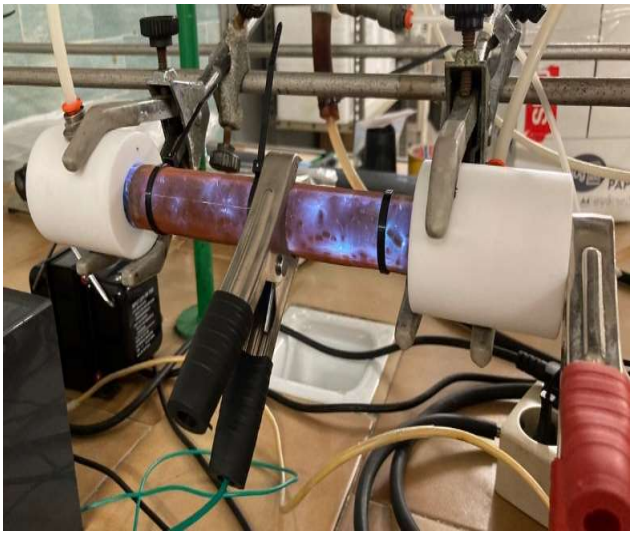
TFM 2: CO_2 reduction using non-thermal plasma generated with photovoltaic energy.

The search of new technical solutions to overcome the problem of climate change is a global challenge and an important research topic. The development of carbon capture and utilization (CCU) technologies are considered essential to fulfill the goals of the Paris agreement and to contribute to clean energy transitions during the next years for several reasons. Among different CCUs, the use of non-thermal plasma (NTP) to convert carbon dioxide into high added value molecules has attracted the interest of many researchers for several reasons. NTP technology is advantageous over other technologies as reaction rates are high and steady state is quickly reached. This facilitates quick start-up and shut-down, a promising feature that enables plasma technology powered by renewable energy to act as an efficient chemical energy storage. The Project will be completely experimental and the student will be checking the performance of the plasma reactor to obtain methane, methanol and other valuable products from CO_2. The project also will give to the student competences in heterogeneous catalysis, reactor engineering, chemical analysis, renewable energies and life cycle assessment. This Master thesis will be integrated in a national project and a PhD thesis.





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Position for one student.