Title: **PREPARATION AND STUDY OF ORGANIC, COVALENT AND POROUS POLYMERS CONTAINING CATALYTIC CENTERS.**

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The aim to get complex structures using simple reactants become the last great challenge. In nanoscience field, one of the last interesting materials with these characteristics are Covalent Organic Frameworks (COF). Discovered by O. Yagui and coworkers in 2005, this polymer is characterised by a crystalline structure, thermal and mechanical resistance, high porosity and predictable covalent bonds, which are strong and reversible. This type of bond is fundamental to reconvert an amorphous polymer to a crystalline one. COF have an easy way to be synthetized because of Dynamic Covalent Chemistry, with non-aggressive reaction conditions. Using monomers with X-aldehyde and X-amine, the formation of imine bond is very effective, and it opens a lot of possibilities of combination of different monomers depending the polymer synthesized. COF are very porous, and they are geometrically defined. This is an advantage because they can be functionalized, using this polymer for different applications like catalysis, ultrasensitive sensors, gas separation, minimize the amount of water pollutants, etc… However, it is necessary transform the pore adding a reagent to get the function desired. Focused in catalysis, azide compounds are the preferred chemical substances. Physical structure of COF in catalysis application is important, so aerogel structure is the most accepted option because of their characteristics and versatility in front of different contexts where we could use this material. The characterisation of the product could be crucial to know and control every synthetic step. IR, RMN, XRDP, BET, TG and EA are technics used for that characterisation. Finally, bibliographical research will be important in order to find the right monomers and the best option of azide compounds for catalysis.