

## **Post-Doctoral Position in CO<sub>2</sub> Valorization by Mechanochemistry**

### Project:

The main goal of this project is to use the wonderful potential of mechanochemistry to develop innovative and efficient valorization of CO<sub>2</sub>. CO<sub>2</sub> is produced in considerable quantities by industrial activities but only a very minor part of this production is recycled and reused. Although many CO<sub>2</sub> conversion pathways by chemical transformation have been described so far, none of them has utilized the benefits that mechanochemistry could provide. Indeed, it is now clearly established that the use of mechanical forces in chemistry has many advantages in comparison with conventional solution-based techniques. These benefits include the ability to work without solvents, to improve reaction rates and yields, to modify selectivity, to greatly improve the reactivity of solids, or to promote unexpected reactivities.<sup>1</sup> For our part, we have recently demonstrated that the mechanical forces produced by a ball-mill enable efficient reactivity between reagents of varied natures, including solid L-Lysine and gaseous CO<sub>2</sub>.<sup>2</sup> Thus, it is envisioned in this project to apply this tremendous potential to the valorization of CO<sub>2</sub>. At first the reactivity of CO<sub>2</sub> will be studied under the influence of mechanical forces on other small model molecules of interest, then the knowledge acquired will be applied to more complex substrates from biomass.

### Profile

Candidate should have a PhD in organic chemistry and solid skills in synthesis and in analytical methods (NMR, mass spectrometry, HPLC, IR, XRD). Candidate should also have a strong interest in the technological and physico-chemical aspects of the project. He/she will be motivated, passionate about chemistry and willing to take on challenges in sustainable chemistry.

### Position details

Position is funded by the Chimie Balard Cirimat Carnot Institute (<http://www.carnot-chimie-balard-cirimat.fr/en>). The project will be performed in the brand new building of [Pôle Chimie Balard](#) located in the CNRS campus, within the Green Chemistry & Enabling Technologies team (<https://greenchem.cnrs.fr>) of the Institut des Biomolécules Max Mousseron in Montpellier, France. The position is for 11 months.

### Application

Please send your CV (english or french, including references) and cover letter in pdf format to Thomas-Xavier METRO: [thomas-xavier.metro@umontpellier.fr](mailto:thomas-xavier.metro@umontpellier.fr)

### References

- 1) Do, J.-L.; Friščić, T., *ACS Cent. Sci.* **2017**, 3, 13; Hernández, J. G.; Bolm, C., *J. Org. Chem.* **2017**, 82, 4007.
- 2) Al-Terkawi, A.-A.; Lamaty, F.; Métro, T.-X., *ACS Sustainable Chem. Eng.* **2020**, 8, 13159, 10.1021/acssuschemeng.0c00217.