


Our solutions

Metal-organic frameworks



Metal-organic frameworks (MOFs) are a class of highly studied materials composed of specially-selected metal and organic chemical building blocks. The judicious selection of building blocks allows scientists to tune the MOF's structure, porosity, hydrophobicity, and resistance to harsh conditions of temperature, pressure, and acidity. The over 20,000 reported MOF materials have thus access to a multitude of functionalities and record-breaking porosities that render them highly attractive candidates for many industrial applications.

The storage of hazardous implant gases and the preservation of fruits and vegetables are examples of recently commercialized technologies benefitting from the exceptional properties of metal-organic frameworks. MOFs are also important candidates for carbon dioxide sequestration, the storage of clean fuels such as hydrogen, as well as the encapsulation and delivery of biologically beneficial molecules.

Our innovative supercritical CO₂ technology not only enables the rapid, cost-effective synthesis of high-quality, high-porosity MOF materials, but also does so in a clean, sustainable and environmentally-friendly manner. We achieve this by virtually eliminating the high volumes of solvents and corrosive reagents usually necessary for the manufacture of MOFs. At the same time, our technology is easily adaptable and optimizable to the production of MOF materials incorporating a wide range of chemical building blocks, making the manufacture of any commercially-relevant MOF more efficient and economically accessible to our clients.

Who we are

Our corporation was founded by a team of experienced chemists from the McGill University Department of Chemistry with diverse but complimentary research backgrounds. Directors Prof. Tomislav Friščić and Prof. CJ Li are both internationally-renowned experts in the field of green and sustainable chemistry. Dr. Cristina Mottillo, CEO is a McGill University graduate and has over five years' experience in environmentally-friendly solid-state synthesis of metal-organic materials.

Our values

- Sustainability: maximize efficiency and minimize negative environmental impact
- Innovation: strive for excellence in product design and manufacturing technology
- Learning: open to and seek understanding of new directions in research and development

Our mission

To provide our customers with high-quality, innovative advanced metal-organic materials that will meet their research or technological needs, while maintaining a manufacturing standard that minimizes negative environmental and societal impact.

Our manufacturing technology

Our patent-pending technology uses supercritical carbon dioxide (scCO_2) to afford the rapid, high-yielding manufacture of highly microporous metal-organic materials. The process uses benign, non-hazardous metal oxide feedstocks instead of corrosive metal salts and virtually eliminates the use of conventional organic solvents, resulting in a more cost-effective, sustainable, and environmentally-friendly process. The technology additionally provides a use for waste CO_2 streams, which can be recycled for re-use.

