

A Trojan Horse Approach to Synthesis of Cu-BDC Patterned Polyaniline/Cu-Carboxymethyl Cellulose Microbeads for Photocatalytic Application

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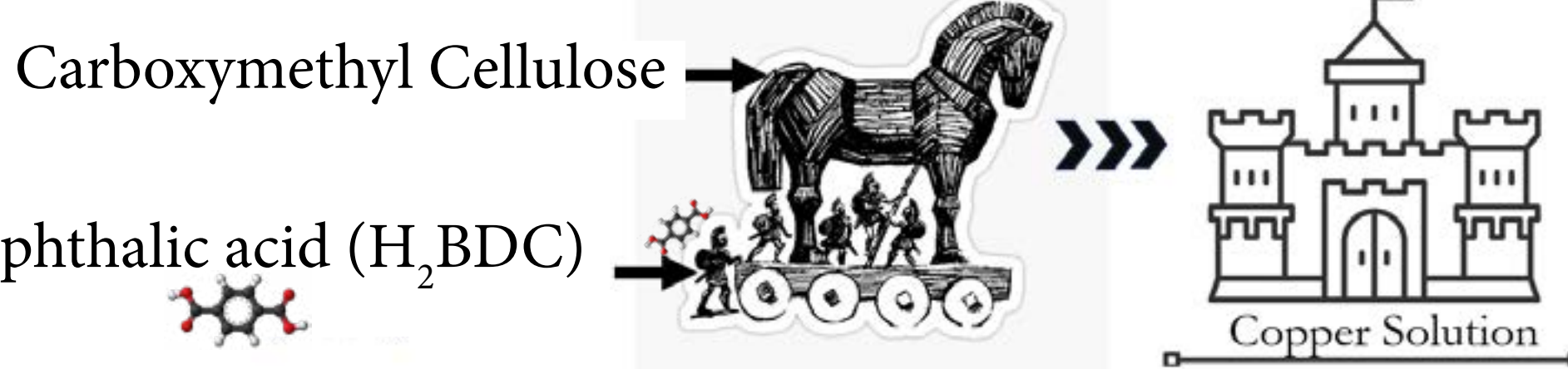
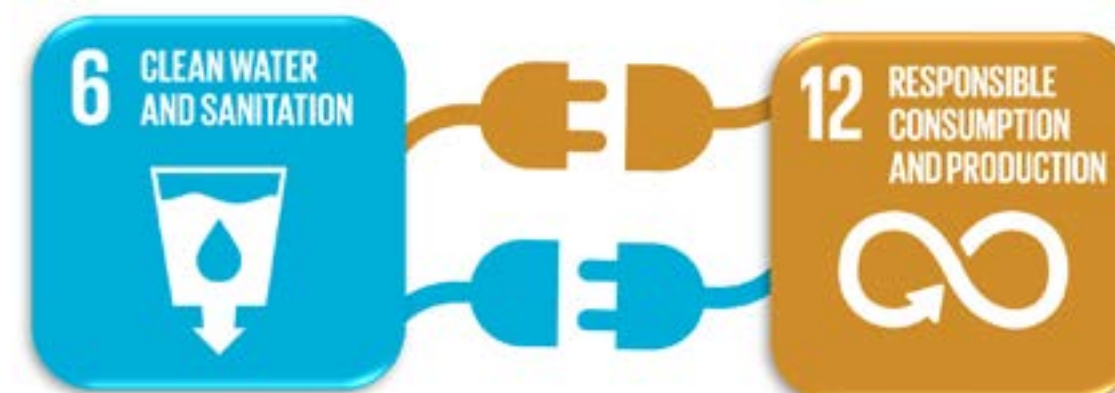
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Background

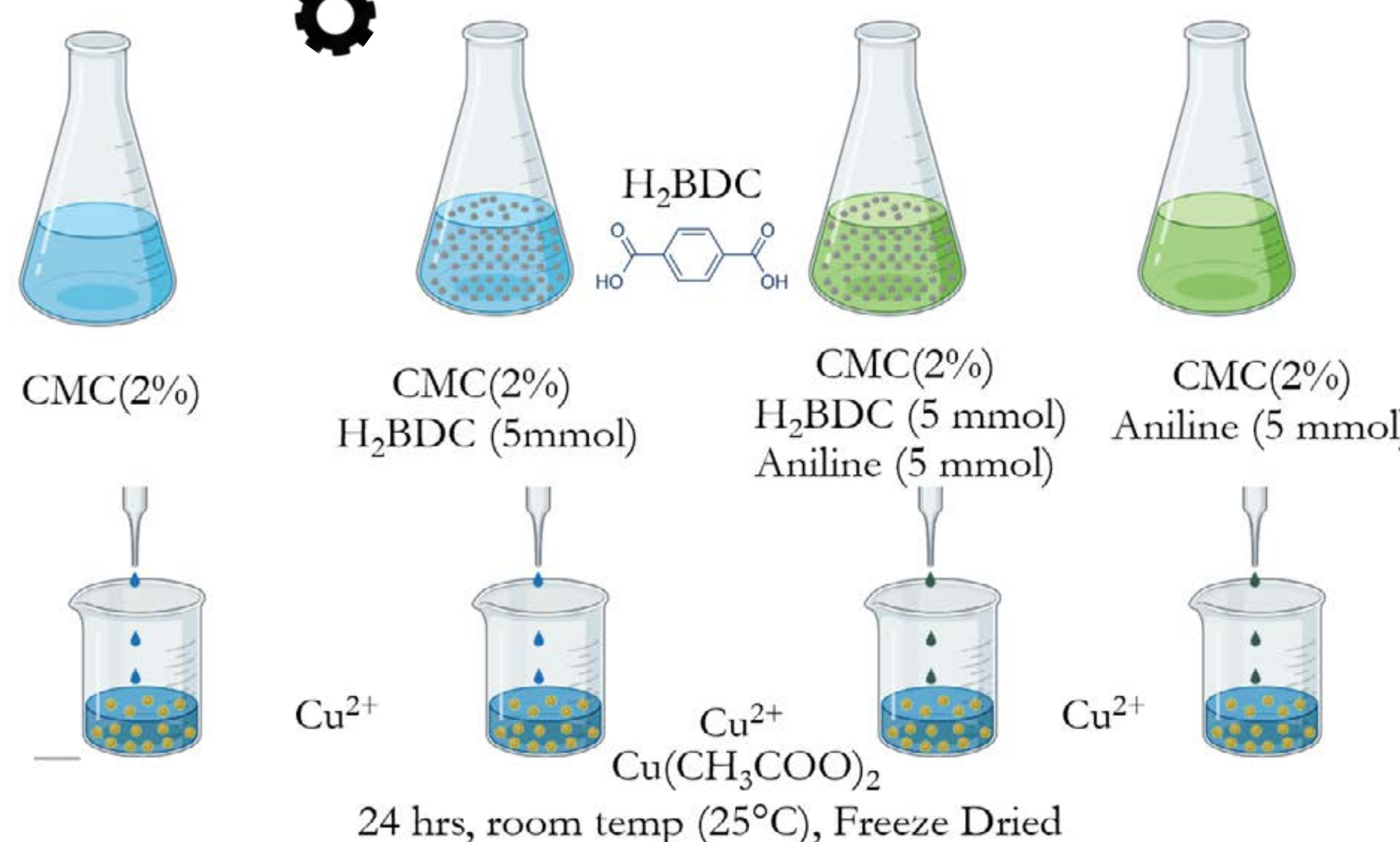
Metal-organic frameworks (MOFs) – tiny, powerful wonders; the future of environmental water cleanup (SDG 6). Why? Their impeccable structure, vast pores, and immense surface area make them ideal.

But there's a catch. MOF powders struggle in the field. They can clog, involve nasty chemicals, and contribute to global warming. Scaling up? A major challenge which contradicts SDG 12.

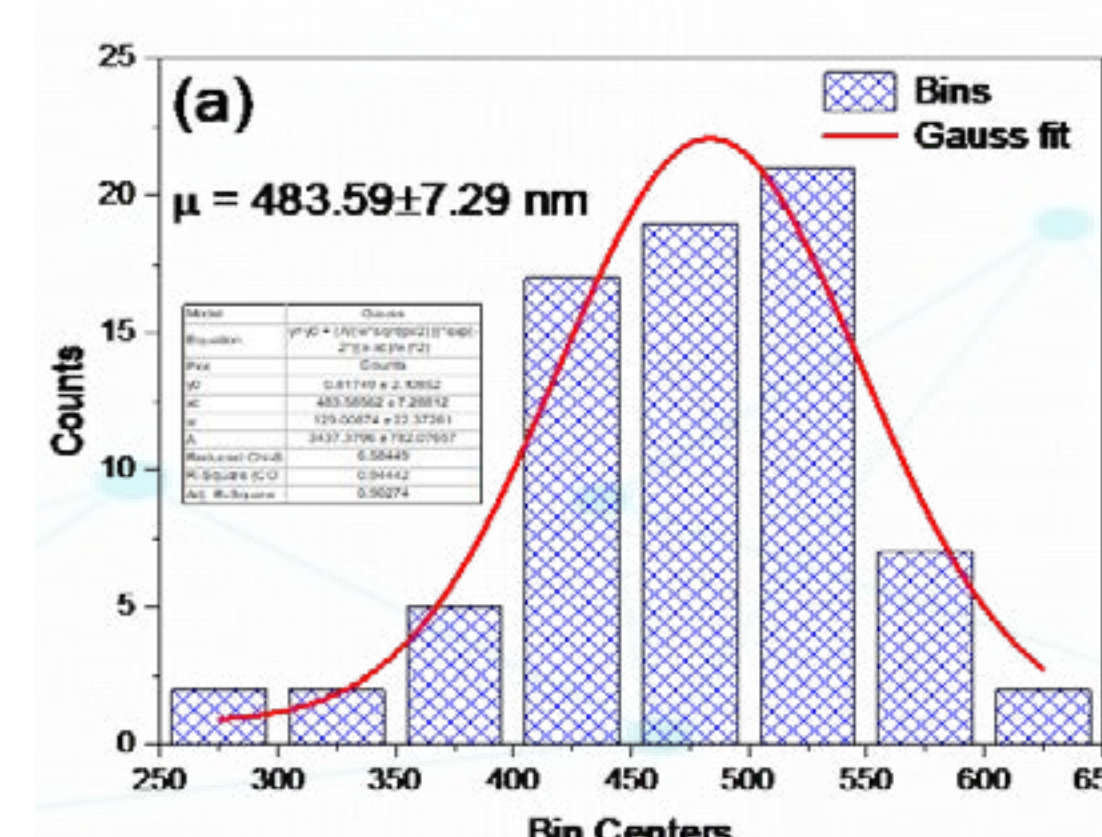
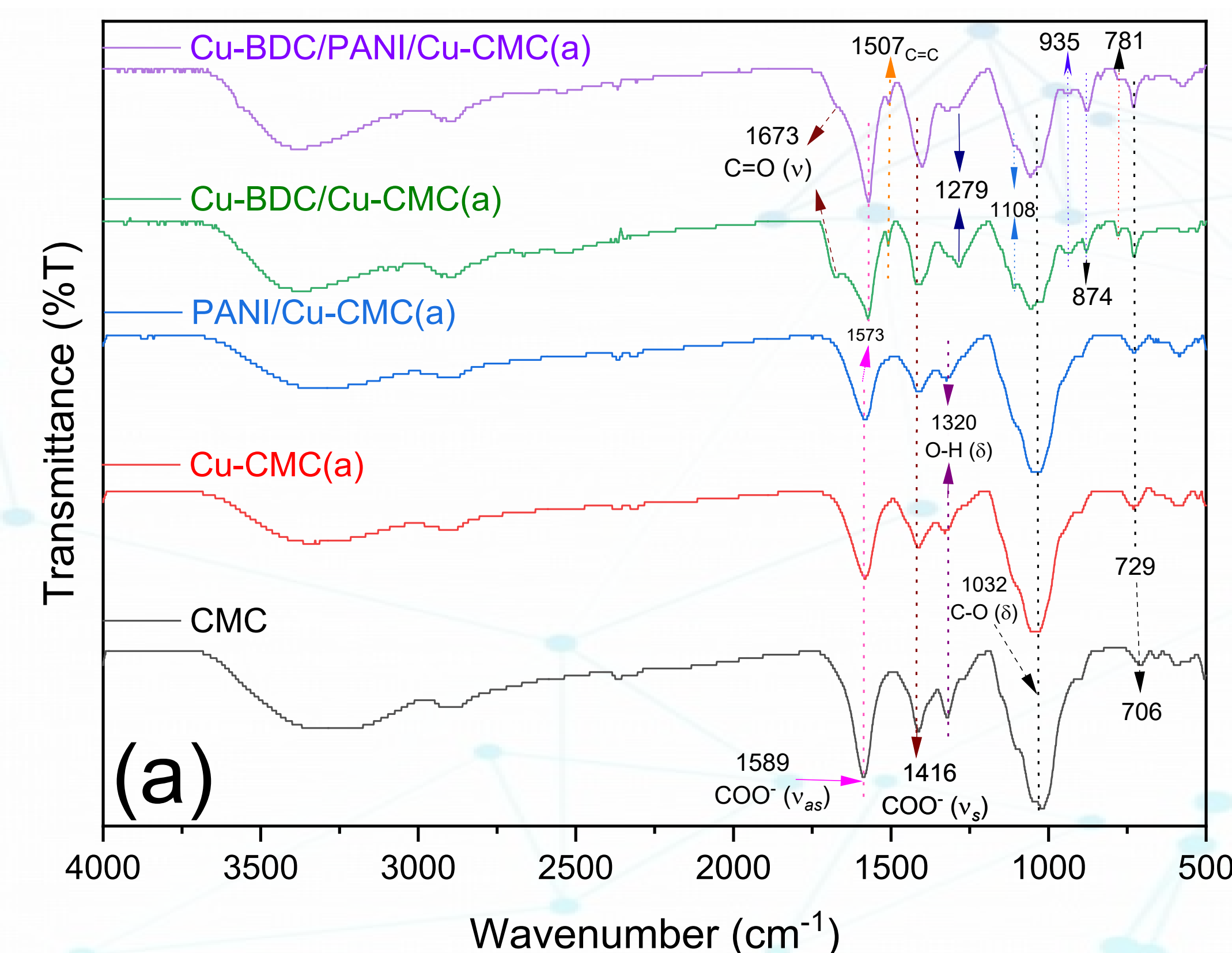
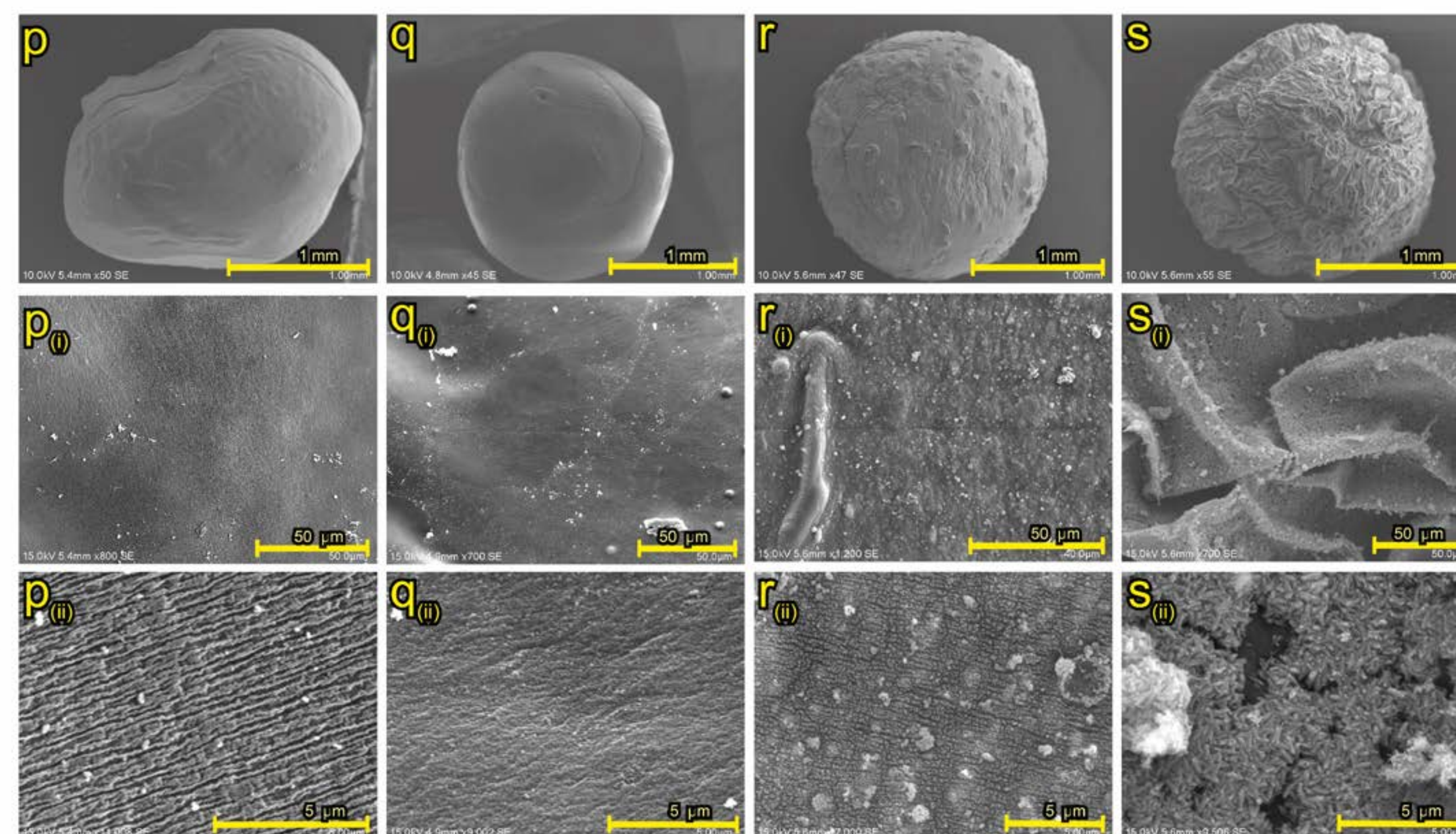
Our solution: MOFs meet green tech. We've developed a planet-friendly method. Cu-BDC MOF on carboxymethyl cellulose microbeads. No toxic chemicals, just water-based solvents. At room temperature. Clean water, a cleaner planet.



Methodology

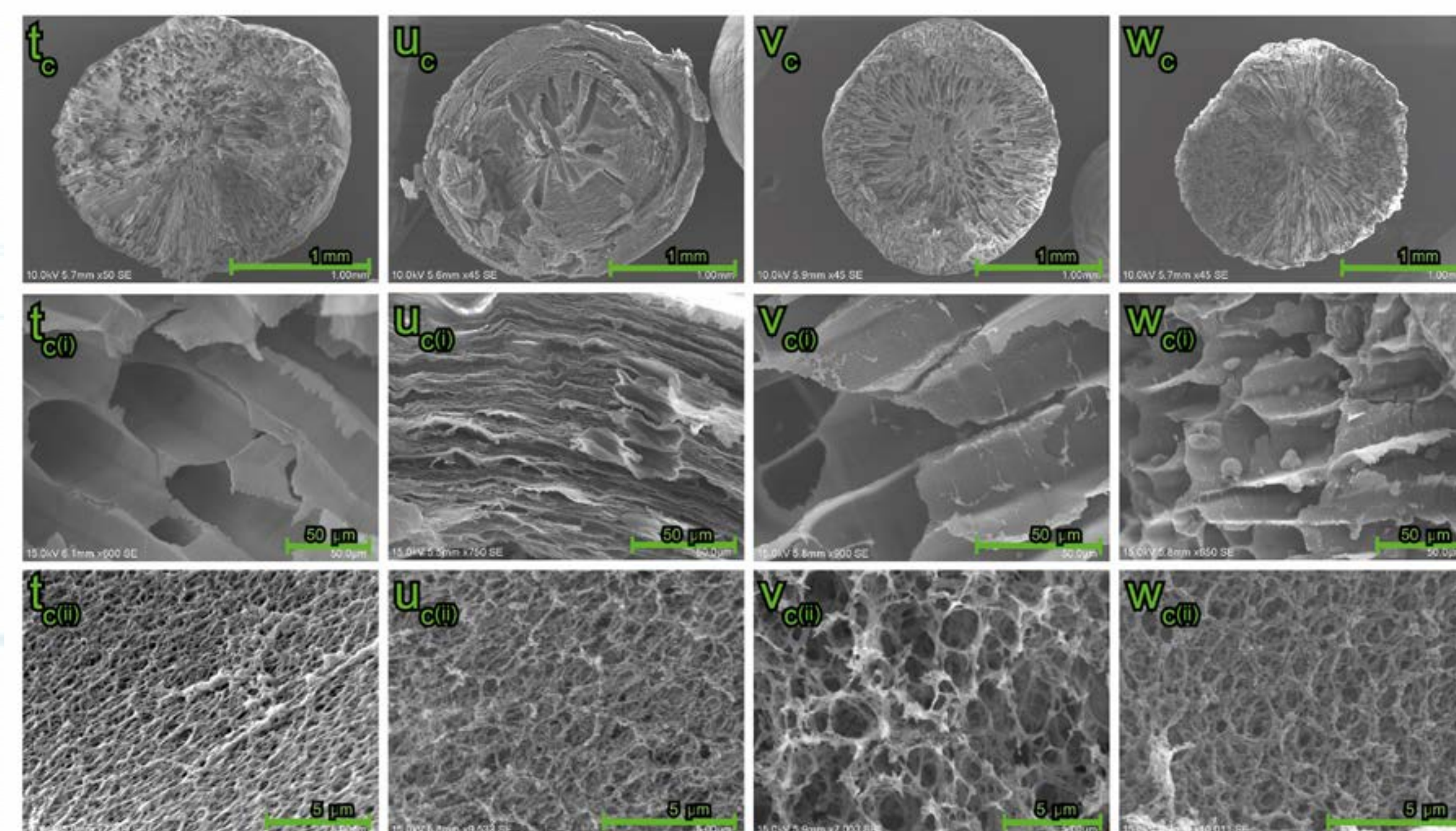
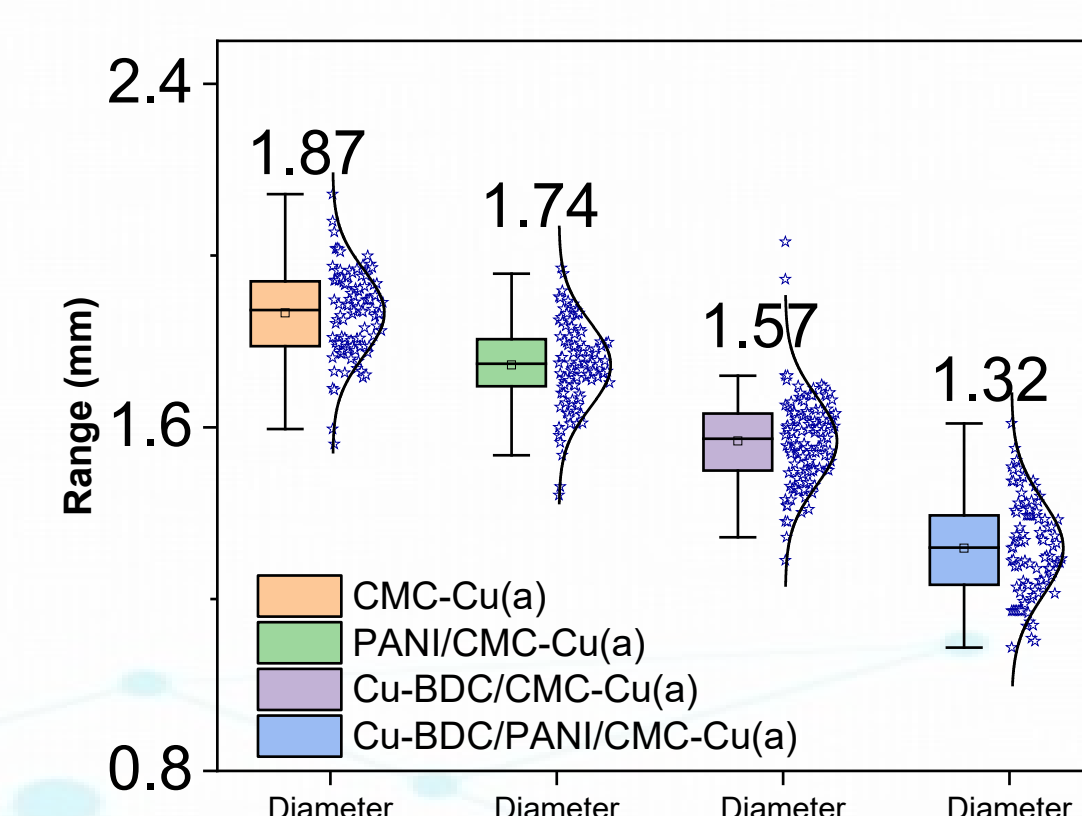


Results and Discussion

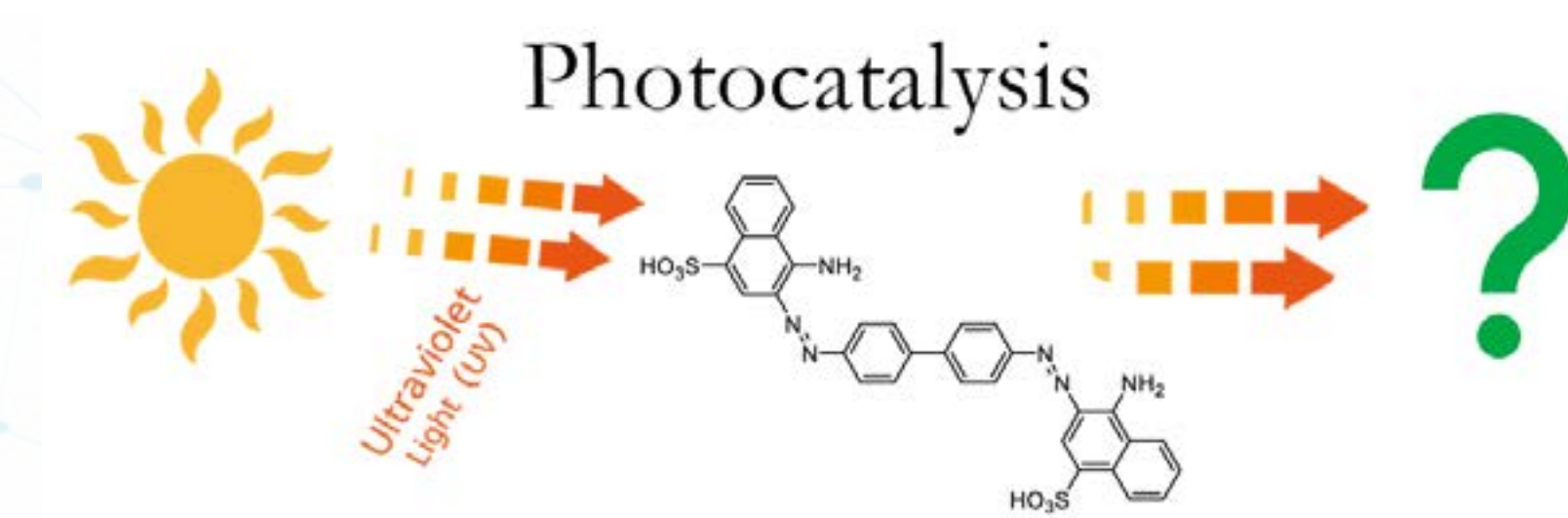
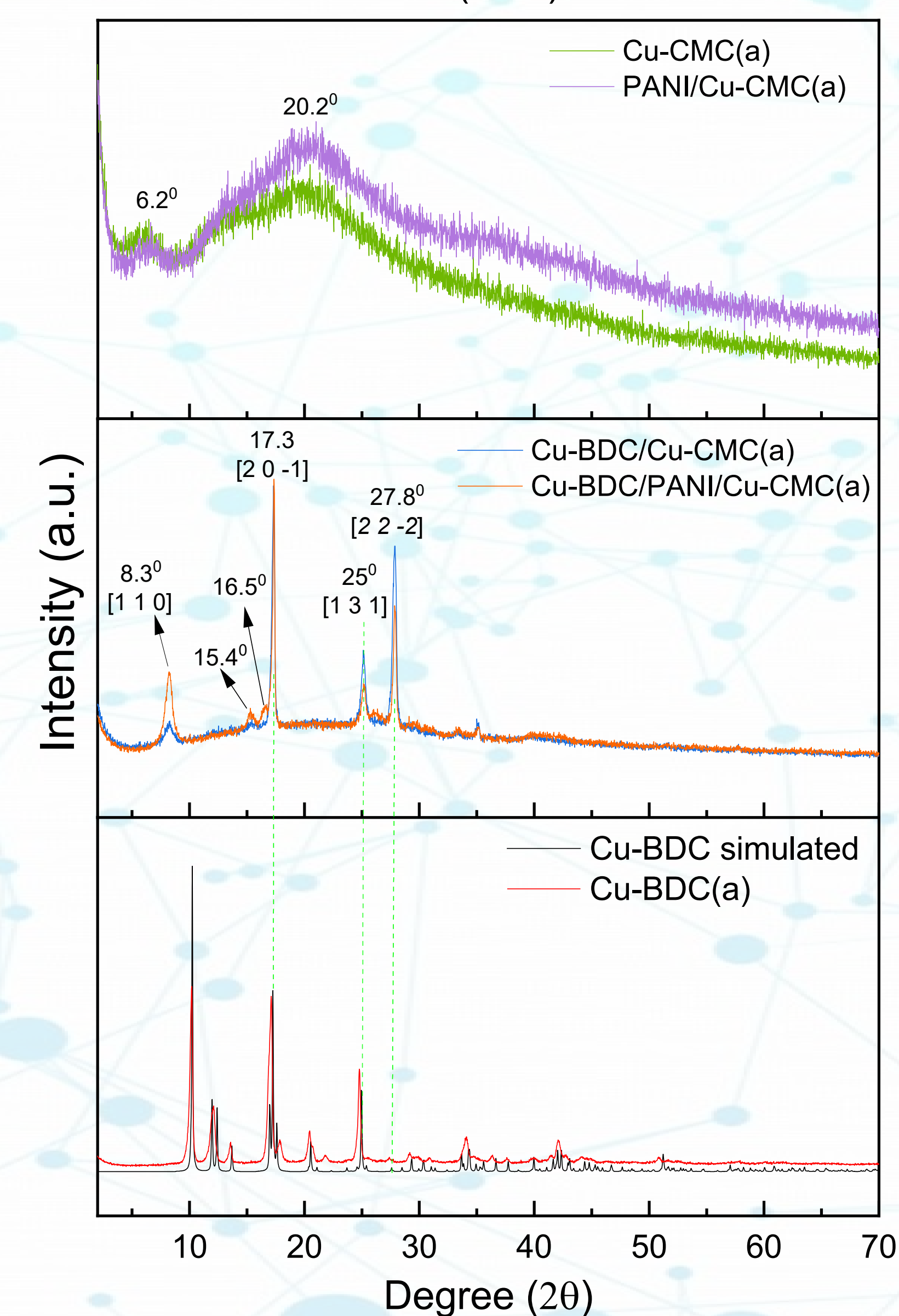


µm sized microbeads

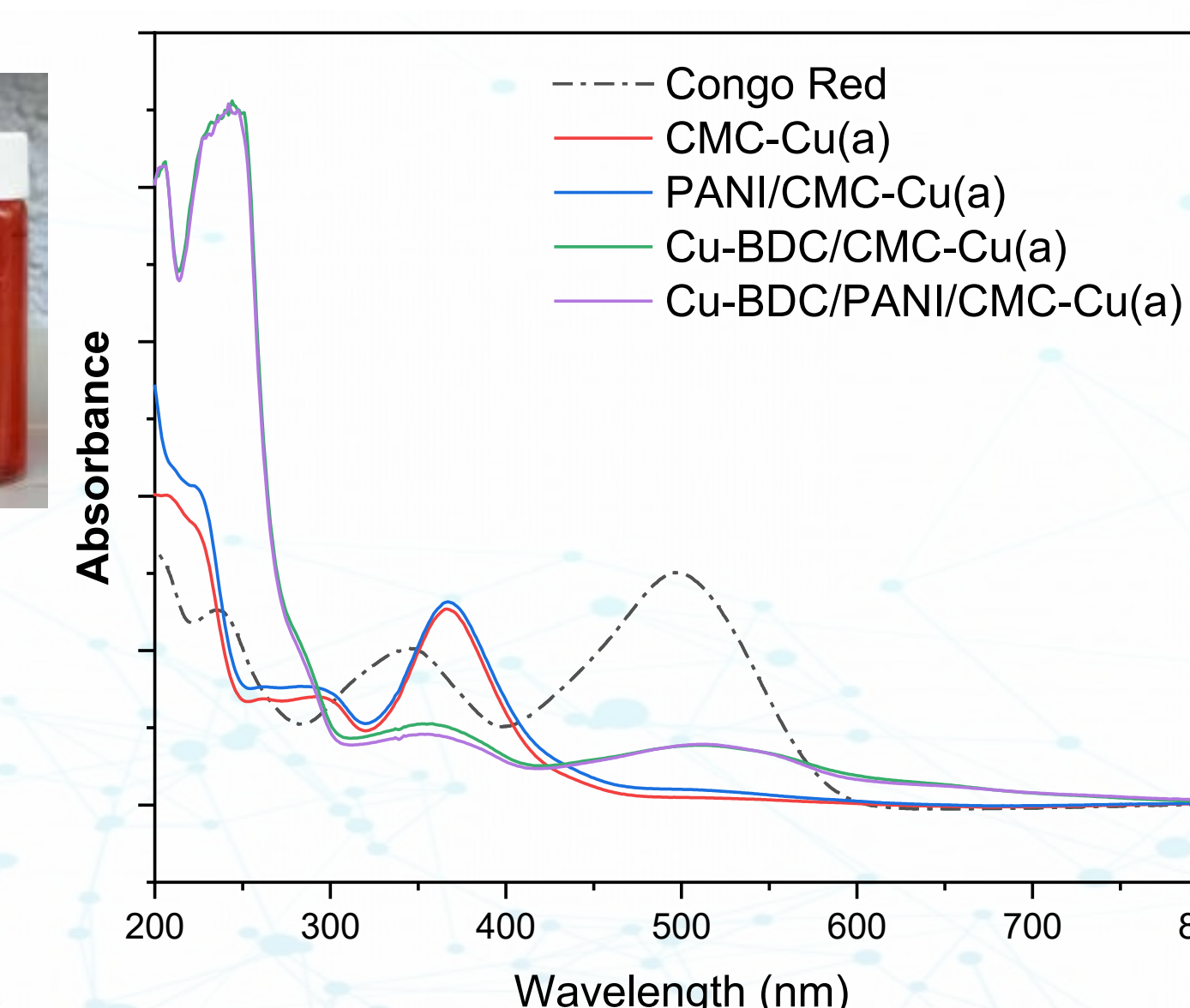
Folds + Rice-like Cu-BDC crystals (FTIR % XRD)



Characteristic Closed-cell foam structures = Evolution of Gases



3 hrs (Direct sunlight)



Conclusion

These microbeads are easy to handle and separate from solutions, making them perfect for industry.

But the real magic? No toxic solvents. We're talking sustainability and health. This research is a leap forward in green materials. It's not just about MOFs; it's about cleaner water and a brighter future.

A bold step in materials science with endless possibilities, especially in tackling emerging water pollutants. The future is here, and it's green.

Acknowledgements

