

Where Safety Meets Sustainability – Oxidations in Continuous Flow

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Hypervalent iodine reagents offer powerful oxidative capabilities and have emerged as attractive, metal-free alternatives to traditional oxidation methods that often rely on toxic metals. However, their high-energy character can raise significant safety concerns, especially in traditional batch processes. In response to these challenges, we have developed a series of continuous flow methodologies that enable safer, cleaner, and more efficient oxidative transformations.

By leveraging solid-supported iodine(V) reagents, green solvents, and benign co-oxidants, our work demonstrates how flow chemistry can unlock the full potential of hypervalent iodine reagents while minimizing environmental impact and operational risk. Our continuous flow system demonstrates excellent robustness, maintaining full efficiency over at least 15 consecutive runs without significant catalyst leaching or degradation.

These systems consistently deliver high selectivity, improved reaction control, and scalability—without compromising safety or sustainability.

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