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Active Food Packaging: Metal – Organic Framework (MOF) Applications

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Abstract

The global food system faces a significant challenge in food waste. Minimizing this waste is essential for promoting a sustainable food chain and ensuring healthy agricultural practices. Traditional methods like drying, pasteurization, and fermentation help preserve food, but often alter its taste and texture. Active food packaging offers a promising solution. This technology incorporates functional components directly into packaging materials. Metal-Organic Frameworks (MOFs), a class of highly porous materials, have emerged as particularly effective active agents. MOFs are built from metal ions and organic molecules, which come together in a specific way to create these cages. This allows MOFs to have different pore sizes and functionalities, making them useful for a variety of applications. This mini review explores the potential of MOFs in extending food shelf life and enhancing safety. Active food packaging reinforced MOFs and their applications as antimicrobials, moisture absorbers, and scavengers are discussed.