# PLATFORM FOR MULTIPLE ISOTOPE LABELING VIA CARBON-SULFUR BOND EXCHANGE

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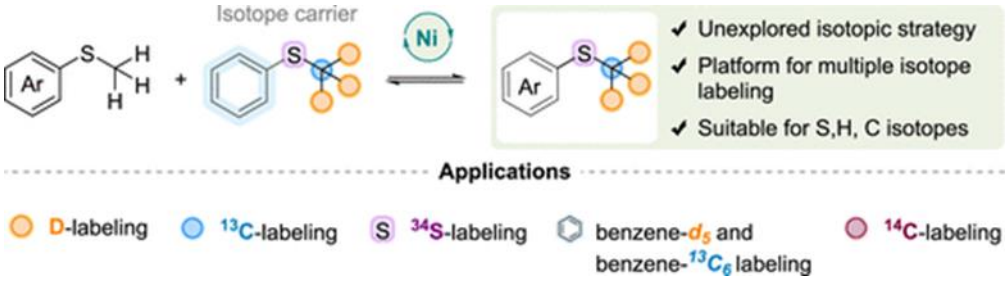


In this work, we explore a nickel-catalyzed reversible carbon–sulfur (C–S) bond activation strategy to achieve selective sulfur isotope exchange. Isotopes are at the foundation of applications in life science, such as nuclear imaging, and are essential tools for the determination of pharmacokinetic and dynamic profiles of new pharmaceuticals. However, the insertion of an isotope into an organic molecule remains challenging, and current technologies are element-specific. Despite the ubiquitous presence of sulfur in many biologically active molecules, sulfur isotope labeling is an underexplored field, and sulfur isotope exchange has been overlooked. This approach enables us to move beyond standardized element-specific procedures and was applied to multiple isotopes, including deuterium, carbon-13, sulfur-34, and radioactive carbon-14. These results provide a unique platform for multiple isotope labeling and are compatible with a wide range of substrates, including pharmaceuticals. In addition, this technology proved its potential as an isotopic encryption device for organic molecules.