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Title: Microscopy Mechanistic Studies

Abstract:

Mechanistic understanding forms the pillar of our ability to design new reactions. Normally, we detect the major component in mixtures, however, the minor components might be responsible for the majority of the chemistry observed at the bulk scale. We describe mechanistic studies with fluorescence microscopy with sensitivity as high as for single organometallic complexes. These studies are developed to determine the mechanistic role of lithium chloride in direct insertion reactions to zinc, providing mechanistic insight into a field of chemistry that is currently progressing empirically. These experiments involve new tool development, and include the first detection of an organometallic reaction intermediate at the single-molecule level.