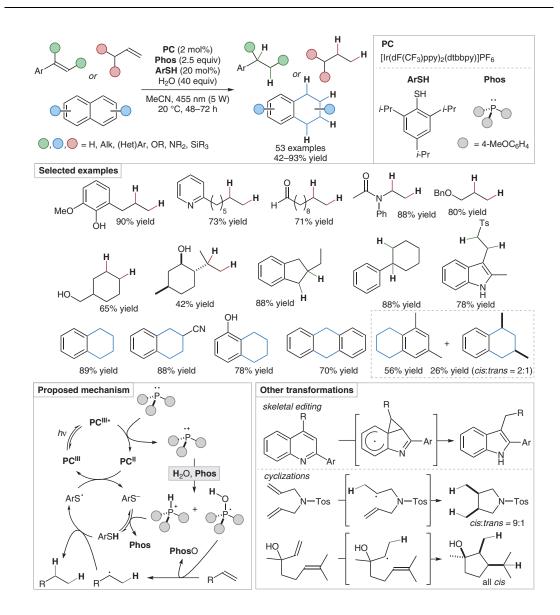
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Photocatalytic Phosphine-Mediated Water Activation for Radical Hydrogenation Nature 2023, 619, 506-513, DOI: 10.1038/s41586-023-06141-1.

Photocatalytic Radical Alkene Hydrogenation by **Phosphine-Mediated Water Activation**



Significance: Studer and co-workers report a photocatalytic radical hydrogenation of alkenes through phosphine-mediated water activation. The method is remarkably compatible with a range of activated and unactivated alkenes, and shows a large functional group tolerance. The corresponding saturated products were generally obtained with good yields and good selectivity.

Comment: The authors elegantly employ hydrogen atom transfer to a closed-shell system to achieve alkene hydrogenation. Using stoichiometric phosphine oxide generation as the driving force, water activation is achieved. This reactivity presents a compelling alternative to known organocatalytic transfer hydrogenations, and additionally facilitates skeletal-editing and cyclization reactions.

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Category

Organo- and Biocatalysis

Key words

photocatalysis hydrogenation unactivated alkenes phosphine radicals



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