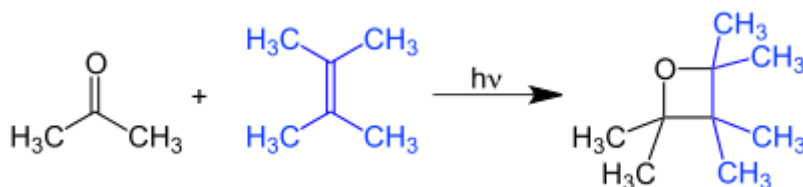


Paternò–Büchi reaction

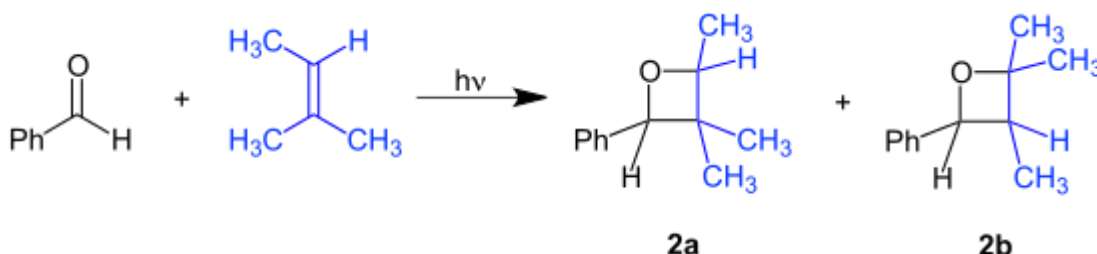
The **Paternò–Büchi reaction**, named after Emanuele Paternò and George Büchi who established its basic utility and form, is a photochemical reaction that forms four-membered oxetane rings from an excited carbonyl and reacting with an alkene.^{[1] [2] [3]}

With substrates benzaldehyde and 2-methyl-2-butene the reaction product is a mixture of structural isomers:

Paternò–Büchi reaction	
Named after	<u>Emanuele Paternò</u> <u>George Büchi</u>
Reaction type	<u>Ring forming reaction</u>
Identifiers	
Organic Chemistry Portal	<u>paterno-buechi-reaction</u>
RSC ontology ID	<u>RXNO:0000083</u>



Here an electronically excited carbonyl group is added to a ground state olefin yielding an oxetane.



Another substrate set is benzaldehyde and furan^[4]

The alternative strategy for the above reaction is called the Transposed Paternò–Büchi reaction.

The aza-equivalent of the above reaction is the Aza Paternò–Büchi reaction.

References

1. E. Paterno, G. Chieffi (1909). *Gazz. Chim. Ital.* **39**: 341. Missing or empty |title= (help)
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3. Thorsten Bach (1998). "Stereoselective Intermolecular [2 + 2]-Photocycloaddition Reactions and Their Application in Synthesis". *Synthesis*. **1998** (5): 683–703. doi:10.1055/s-1998-2054 (<https://doi.org/10.1055%2Fs-1998-2054>).

4. *Paternò–Büchi Reaction as a Demonstration of Chemical Kinetics and Synthetic Photochemistry Using a Light Emitting Diode Apparatus* Matthew P. Thompson, Jonathan Agger, and **Lu Shin Wong** *Journal of Chemical Education* 2015 92 (10), 1716-1720
[doi:10.1021/acs.jchemed.5b00129](https://doi.org/10.1021/acs.jchemed.5b00129) (<https://doi.org/10.1021%2Facs.jchemed.5b00129>)

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