C–H Activation of Gaseous Alkanes

Significance: Noël and co-workers describe a photocatalytic C–H activation of gaseous alkanes and subsequent trapping with various Michael acceptors in continuous flow. The corresponding alkylated products were obtained in moderate to excellent yields.

Comment: Mechanistically, the authors propose an initial activation of the photocatalyst TBADT, which relaxes to its active form wO. A hydrogen abstraction forms a carbon-centered radical, which undergoes a 1,4-addition to a Michael acceptor. Hydrogen back-donation affords the alkylated product and regenerates the catalyst.