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Olefin metathesis is now one of the most efficient ways to create new carbon – carbon bonds. If most efforts focused on the development of ever-more efficient catalysts, a particular attention has recently been devoted to develop latent metathesis catalysts, inactive species that need an external stimulus to become active. This furnishes an increased control over the reaction which is crucial for applications in materials science. In this talk, I will discuss our recent work on the development of a new system to achieve visible-light-controlled ruthenium-catalyzed olefin metathesis using photoredox catalysis. The combination of a ruthenium metathesis catalyst bearing two N-heterocyclic carbene ligands with an oxidizing pyrylium photocatalyst affords high levels of temporal and spatial resolution using only visible light as stimulus. Applications of the system in synthetic chemistry, as well as in polymer patterning and photolithography with spatially-resolved ROMP, will also be discussed.