

# PHOTOCATALYTIC SYNTHESIS OF $\gamma$ -LACTONES FROM ALKENES: HIGH RESOLUTION MASS SPECTROMETRY AS A TOOL TO STUDY PROTOREDOX REACTIONS

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$\gamma$ -Lactones are very important moieties in natural products, products of biological importance, perfumes and food additives. Thus, many synthetic approaches for the synthesis of lactones have been devised, utilizing as starting materials a variety of organic compounds. However, olefins are among the most popular synthetic blocks. Our laboratory has developed a photocatalytic protocol for the intermolecular synthesis of  $\gamma$ -lactones via photoredox catalysis, taking advantage of the ATRA reaction. Utilizing  $\text{Ru}(\text{bpy})_3\text{Cl}_2$  as the photocatalyst, a cheap and reproducible synthetic protocol for the synthesis of  $\gamma$ -lactones has been introduced. Mechanistic studies revealed the successful monitoring of photocatalytic reactions and radical intermediates via High Resolution Mass Spectrometry (HRMS) [1].

