

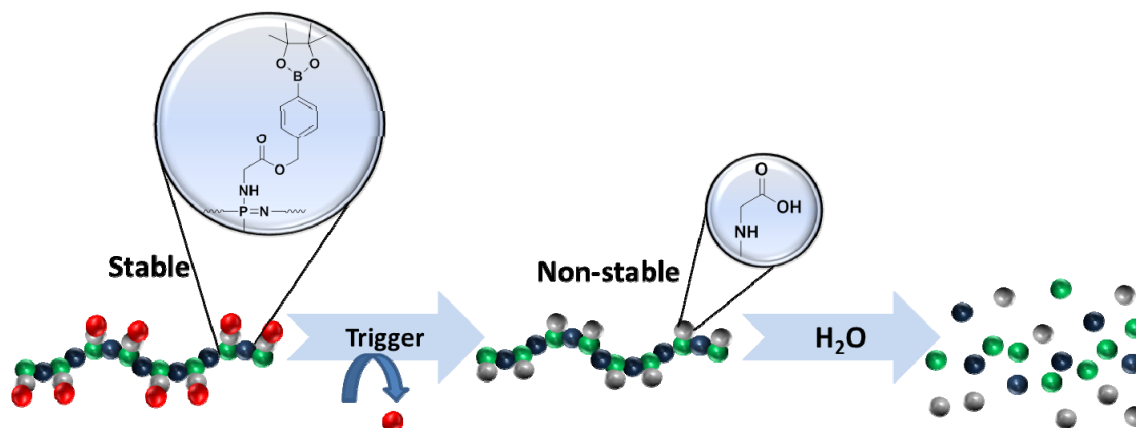
# TRIGGERED DEGRADATION OF INORGANIC POLYMERS

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Degradable polymers are of great promise for many applications. In this work we present the synthesis of a series of polymers with triggered degradation where oxidation and photochemical stimuli have been developed. We report a series of poly(organo)phosphazenes with self-immolative side groups which, despite having good hydrolytic stability, degrade upon oxidation [1]. Reactive oxygen species (ROS), such as  $\text{H}_2\text{O}_2$ , have wide influence on living organisms, but overproduction of ROS can damage cellular components [2]. ROS have been used as oxidative trigger to initiate the degradation of the polymers, as well as nanogels thereof, to small molecules. In the second part of this contribution, we present our recent work in ruthenium based polymer gels. A novel ruthenium complex, with reactive amine groups, is incorporated into the main chain of polyureas and is shown to cleave in response to mild, visible light irradiation leading to polymer degradation. Photochemistry of the complex has been carefully studied before it is included into the polymer and rapid degelation has been proved by photorheology.



[1] A. Iturmendi, U. Monkowius, Ian Teasdale, *ACS Macro Lett.*, **2017**, 6, 150

[2] Q. Xu, C. He, C. Xiao, X. Chen, *Macromol. Biosci.*, **2016**, 16, 635