FORMATION OF SPIRO AND FUSED HETEROCYCLES VIA MERCURIC ACETAT INDUCED -> OXIME -> NITRONE CYCLOADDITION CASCADES.

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Introduction
Oximes are attractive precursors of nitrones because of their ease of preparation and wide availability, while the nitrone cycloaddition products, isoxazolidines, are useful synthetic intermediates owing to the ready reductive cleavage of the N-O bond1-2.

Discussion
We have been exploring the generality of electrophile induced oxime-alkene (alkyne) reactions as a source of novel tandem nitrone formation-cycloaddition methodology (Scheme 1)3 Spiro- and fused- ring heterocycles were prepared from oximes and proximate alkenes via electrophile induced oxime -> nitrone -> cycloaddition cascades. The stereochemistry of products were determined by n.O.e spectroscopy, 2D-COSY studies and X-ray crystal structure determination.

Conclusion
Oximes possessing alkenyl substituents are cyclised by mercuric acetate to the corresponding cyclic nitrones. Mercurated nitrones undergo facially specific cycloaddition reactions with N-methylmaleimide to afford spiro and fused cyclic products.

References