

3<sup>rd</sup> Annual Congress on**Pollution and Global Warming**

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**Salen-quinoxolinol ligand supported Cu(II) catalysts for oxidation in aqueous systems****Anne Elizabeth Vivian Gorden**  
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Streamlining synthesis improves atom economy or selectivity improves sustainability of chemical processes which makes better use of dwindling natural resources. Introducing catalytic reactions or limiting volatile organic solvents (VOS) are required for purifications or are two examples of reducing industrial impacts. Most catalytic systems feature toxic metals, high catalyst loading, and/or hazardous organic solvents. Selectivity and optimal conditions remain elusive. Previously, we have developed 2-quinoxalinol salens, Schiff base ligands with a quinoxaline incorporated into a salen backbone, nicknamed Salqu, as catalyst supports for Cu(II). The imbued electronic properties of the heterocycle improves solubility and increases catalytic efficacy as compared to analogous salen or salophen complexes in oxidation reactions. Simple olefin substrates can be oxidized using the salqu catalyst with TBHP (up to 99% yield) with short reaction times and improved selectivity. These Salqu ligands have now been modified through sulfonation to be water soluble. The aqueous soluble metal catalysts then possess some of the beneficial properties of homogeneous catalysis - selectivity and efficiency, while also being more easily recoverable and recyclable. The Sulfosalqu ligands have been used in Cu(II) complexes for the selective oxidation of propargylic, benzylic and allylic alcohols to the corresponding carbonyl compounds in water in combination with the oxidant tert-butyl hydroperoxide (TBHP). Excellent selectivity was achieved with this catalytic protocol for the oxidation of propargylic, benzylic, and allylic alcohols over aliphatic alcohols. Here, we describe the efficacy of these in C-H activation and their mechanism of reaction..

**Biography**

Anne Elizabeth Vivian Gorden has completed her PhD while working with Jonathan Sessler at the University of Texas at Austin in Organic Chemistry. She then moved on to do Post-doctoral research with Kenneth Raymond, first at the University of California - Berkeley and then at Lawrence Berkeley National Laboratory Seaborg Center. In 2005, she started as an Assistant Professor at Auburn University, the land grant university for Alabama. She was tenured and promoted to Associate Professor in 2011. She is Faculty Advisor for the Auburn Association of Women in Science, and she is an Author of more than 40 peer-reviewed publications.

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