Divergent Outcomes of Gold(I)-Catalysed Indole Additions to Cyclopropenes

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1. Introduction
The Lee Group has successfully developed gold(I)-catalysed reactions with cyclopropenes (e.g. Figure 1).\textsuperscript{1,2} This project focuses on the exploration of gold-catalysed indole additions to cyclopropenes.

2. Project Aim
The aim of the project is to develop the divergent synthetic routes to 3-(E)-vinylindoles \textbf{1} and bis-indolylalkanes \textbf{2}. By controlling the conditions of the reaction, one of the products can be selectively formed.

3. 3-(E)-Vinylindole Synthesis

4. Bis-indolylalkane Synthesis

5. Surprising Oxidation Result

6. Future Work
A more detailed investigation into the formation of oxidation products \textbf{4} and \textbf{5} is ongoing. In particular, the mechanism will be probed. Further gold(I)-catalysed reactions with 3,3-disubstituted cyclopropenes will be developed to obtain structurally useful products.

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