Dibromination of *trans*-Stilbene

CHEM HELP *ASAP*

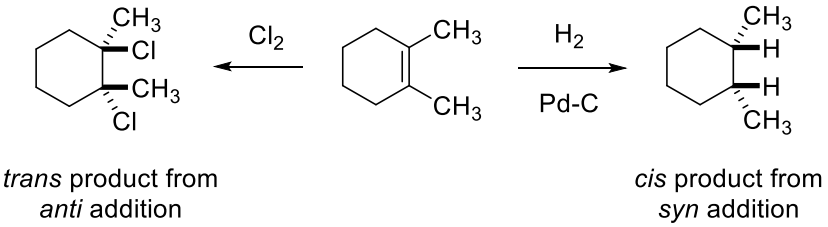
experiment video: https://youtu.be/i5OkMupIgNY

Purpose

The purpose of this experiment is to demonstrate a dibromination on *trans*-stilbene. The crude product is isolated by simple filtration and is pure enough to be characterized in its crude form.

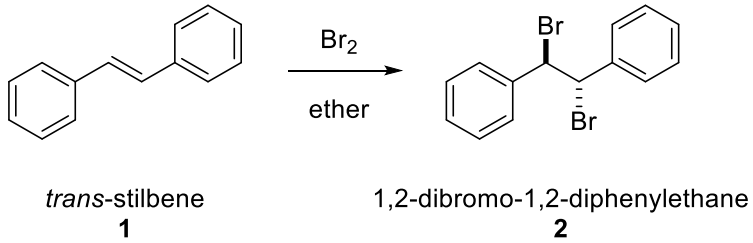
Background

Addition reactions are commonly encountered in organic chemistry. Some additions, such as halogenations, are *anti* additions. Some additions, including the hydrogenation, are *syn* additions (Scheme 1). Still others, such as hydrohalogenations, are neither *syn* nor *anti* because the carbocation intermediate of the reaction does allow any stereocontrol in the products.



Scheme 1. *Syn* and *anti* additions on a cyclic alkene.

Dibrominations on alkenes with Br_2 undergo an *anti* addition. The reaction can be easily demonstrated on *trans*-stilbene (**1**), a stable and readily available alkene reagent that is found in many organic chemistry labs (Scheme 2). The product is called 1,2-dibromo-1,2-diphenylethane (**2**).



Scheme 2. Today's reaction – dehalogenation of *trans*-stilbene

Procedure – 1,2-dibromo-1,2-diphenylethane

In a 20 mL scintillation vial dissolve *trans*-stilbene (3.0 mmol) in 10 mL ether with stirring and then add Br_2 (3.5 mmol) dropwise. Allow the reaction to stir for approximately 30 min at room temperature. Check the reaction by TLC (mobile phase = hexane). If starting material remains, add another aliquot Br_2 (1.0 mmol), wait another 30 min, and re-check by TLC. Once the starting material has been consumed, filter the mixture with a Buchner funnel and a 125-mL side-arm flask. Be sure to seat the filter paper with ether, not water. Rinse the filter cake with ether. Allow the isolated product to air dry, determine the product's mass, calculated a percent yield, record the melting range, and perform a TLC analysis of the product. Dispose of your mobile phase in a waste container. Interpret the provided NMR spectrum. Record all your observations in your notebook.