

UNIVERSITI TEKNOLOGI MARA

**SYNTHESIS OF 3,4-DIMETHOXY-10-
BENZYLOXYSTILBENE**

HANISAH JAN BINTI ABDUL SHATAR

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ABSTRACT

The aim of the research is to synthesis 3,4-dimethoxy-10-benzyloxystilbene. In order to accomplish it, three established reactions have been used. Protection of 2-iodophenol with benzyl bromide as a protecting agent was the first step. Then, conversion of the 3,4-dimethoxybenzaldehyde to 3,4-dimethoxystyrene has been done via Wittig reaction. Finally, both compounds were coupled together in the presence of palladium chloride as a catalyst and methyl triphenylphosphine iodide as a ligand through Heck reaction (0.8187 g; 73.9% yield). TLC, ¹H-NMR, UV, IR and melting point characterization were used for conformation the of the products. The stilbene, which is expected to be formed, was successfully synthesized.

CHAPTER 1

INTRODUCTION

1.1 Introduction of stilbene

Trans-1,2-diphenylethylene, aka, stilbene, or more specifically, (E)-stilbene, is the alkene, ethene with two phenyl groups on either carbon of the parent chain. The name was derived from the Greek word stilbos, which means shining. Should be noted, there is also a (Z)-stilbene which is sterically hindered and less stable because of its melting point (MP). (Z)-stilbene has a MP of 5°C to 6°C, while the MP of (E)-stilbene is in the 125°C area, this illustrates the significant differences between the two (Wikipedia).

1.2 Uses of stilbene

1,2-diphenylethene **1** is mainly used in manufacture of dyes and optical brighteners, and also as a phosphor and a scintillator. Stilbene is one of the gain mediums used in dye lasers. Many stilbene derivatives (stilbenoids) are present naturally in plants but in small amount (Wikipedia).

In particular, the stilbene compound resveratrol (*trans*-3,4',5-trihydroxystilbene) **2** has received considerable attention for its potential medicinal properties, and has been identified as a compound promoting increased lifespan. Its biological properties include inhibition of protein-tyrosine kinases, reduce risk of coronary heart disease, antioxidant, antimutagen, antineoplastic *etc* (Becker, J. V. W. et al., 2003; Evers, D. L. et al., 2004).