

Removal of CuS Phase on CuInS₂ by Electrochemical Treatment (Times

New Roman, 16pt, Boldface, center, 每一個英文字的第一字母大寫，其餘字母介系詞、冠詞均小寫)

Chau-Le Wang¹ Yih-Min Yeh¹ Yin-Yu Chang² (Times New Roman, 12pt, center)

¹ Graduate School of OptoMechatronics and Materials, WuFeng University

² Institute of Materials and Systems Engineering, Mingdao University (Times New Roman, 11pt, center)

Abstract (Times New Roman, 12pt, Boldface, center)

A simple process for the deposition of CuInS₂ thin films was described. The CuInS₂ compound was prepared by heat treatment of Cu-In alloy precursors, which were electrodeposited at a constant current. Furthermore, we present a novel method to remove the unwanted covellite (CuS) in Cu-rich prepared CuInS₂ thin films. Our treatment results in a solid state transformation by electrochemical reduction in an alkaline electrolyte. The reduction is carried out in the potential range between -0.9 and -1.1 V vs. a saturated calomel electrode (SCE). X-Ray diffraction (XRD) shows the complete removal of CuS. (Times New Roman, 12pt)

Keywords: Cu-In alloy, CuInS₂ thin films, electrochemical, thin film solar cells (Times New Roman, 12pt, Boldface)

以電化學處理去除 CuInS₂ 薄膜之雜相的技術 (標楷體, 16pt, 粗體, 置中)

王朝樂¹ 葉翳民¹ 張銀佑² (標楷體, 12pt, 置中)

¹ 吳鳳科技大學光機電暨材料研究所 E-mail: ymyeh@wfu.edu.tw

² 明道大學材料科學與工程學系 E-mail: yinyu@mdu.edu.tw (標楷體, 11pt, 置中)

摘要 (標楷體, 12pt, 粗體, 置中)

在本文中，我們將敘述一種沉積 CuInS₂ 薄膜的簡易製程。係先以定電流電沉積 (Electrodeposition) 方式製備 (Cu-In) 預製膜後，再將預製膜放置爐管中進行熱處理而得到 CuInS₂ 薄膜。同時，我們也將提出新的去除在製備 CuInS₂ 薄膜時所產生不想獲得之 CuS 雜相的方法。我們乃藉由在鹼性電解液中進行電化學還原所產生之固態相變所完成；所施加還原反應電壓相對於參考電位為 -0.9 至 -1.1 V 之間。實驗結果經由 XRD 分析顯示可以完全去除 CuS 雜相。 (標楷體, 12pt)

關鍵詞：銅銻合金、二硫化銅銻薄膜、電化學、薄膜太陽能電池 (標楷體, 12pt, 粗體)