

# 合成含吡啶甲酸之鉛(II)金屬配位聚合物及其結構分析

## Synthesis and Crystal Structure of Lead (II) Complex with Pyridinecarboxylate

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(Received, July 01, 2011; Revised, October 24, 2011; Accepted, November 08, 2011)

**摘要：**將4-吡啶甲酸加 $\text{Pb}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ 及4,4'-雙吡啶加水混合，利用水熱合成反應，得到鉛(II)的配位聚合物，其化學式為 $[\text{Pb}(\mu_3\text{-pya})_2]_\infty$  (pya = 4-吡啶甲酸)。利用 X-Ray 晶體繞射儀、FT-IR光譜儀及元素分析儀測定產物晶體結構及性質，結果顯示，錯合物以Pb(II)為配位中心，含六個 O 原子以及兩個 N 原子，四個 O 原子分別為兩個 pya 的甲酸上的雙螯配位的氧原子，另兩個 O 原子分別來自兩個 pya 的甲酸上的單螯配位的氧原子，兩個 N 原子分別為 pya 上吡啶環上的 N 原子，配位構成八配位扭曲的雙帽三角錐型體幾何結構。錯合物為無限延伸 3-D 的網狀結構，由於 C-H...O分子間的氫鍵作用力及吡啶環之間的  $\pi \cdots \pi$  吸引力，使得此晶體更穩定。錯合物  $[\text{Pb}(\mu_3\text{-pya})_2]_n$  是八配位，依據 Pb-N 及 Pb-O 鍵的方向而論，顯示鉛(II)離子是全方位導向。

**關鍵詞：**水熱反應、4-吡啶甲酸、鉛、自組裝

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**Abstract :** A coordination polymer,  $[\text{Pb}(\mu_3\text{-pya})_2]_n$  (pya = 4-pyridinecarboxylate), is hydrothermal synthesized from the reaction of  $\text{Pb}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ , pyaH, and 4,4'-bipyridine. Title complex is fully characterized by FT-infrared and elemental analysis. Each Pb(II) ion is coordinated with six oxygen atoms from two pya chelated oxygen atoms and other two pya ligands, and two nitrogen from two pya molecules, giving a distorted bicapped trigonal prism coordination geometry. X-ray structure analyses show complex was 3-D networks *via* C–H $\cdots$ O hydrogen bond and  $\pi\cdots\pi$  stacking interactions. The Pb(II) ion in  $[\text{Pb}(\mu_3\text{-pya})_2]_n$  is eight-coordinate and the direction of the Pb–N and Pb–O bonds shows that the coordination around the Pb(II) ion is holodirected.

**Key words:** Hydrothermal Reaction, 4-Pyridinecarboxylic acid, Lead, Self-assembly

# 人蔘飲品滿意度與自覺生心理效用

## Satisfaction of Ginseng Drink and its Effects of Self-reported Status on Physiology and Psychology

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(Received, September 01, 2011; Revised, November 30, 2011; Accepted, December 15, 2011)

**摘 要：**本研究目的旨在探討在使用人蔘飲品後是否影響自覺的生心理方面之生活品質與對該產品滿意度，並瞭解產品滿意度與自覺的生活品質感受間之相關性。研究方法採立意抽樣以新竹某機構員工 40 人為樣本，並依樣本性質區分為勞心組、勞力組、B 肝帶原組與對照組，研究期間除對照組外，每人每天飲用一瓶人蔘飲品連續三個月，並分別於飲用人蔘前後施行結構式問卷調查，研究時間為 97 年 10 月至 12 月。資料分析以配對 t 檢定來探討受測者在飲用人蔘飲品後對產品滿意度和生活品質的影響，並探討產品滿意度與生活品質之間的相關性。在使用人蔘飲品三個月後，男性組、女性組、勞心組與勞力組在生理反應上都有顯著改善(p<0.05)，B 肝帶原組與對照組則無明顯改善；另外，男性、勞心組、勞力組與 B 肝帶原組在心理反應方面均具統計上顯著改善效果，但女性與對照組則無顯著改善。另利用主成

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份分析(principle component analysis)重新對變項命名後，比較產品使用後滿意度與自覺生活品質間相關性發現：1.產品「心靈感受」滿意度與自覺生活品質中的「生理」關係為顯著正相關( $r=0.550$ )；2.自覺生活品質中的「生活型態困擾」與產品「心靈感受」滿意度的關係則呈現負相關( $r=-0.367$ )。本研究認為該人蔘飲品對生心理方面之生活品質有所改善，個人對產品的滿意度與自覺生活品質有關。

**關鍵詞：**人蔘、產品滿意度、生活品質、性別、生理、心理

**Abstract:** The purpose of this study is: first, to explore whether a ginseng product has effects on the self-reported quality of life; second, to explore the relationship between product satisfaction and self-reported status on quality of life. 40 employees from certain Taiwan Hsinchu Institutes were selected and required to have a bottle of ginseng product daily for three months. We categorized 30 subjects into three study groups (management, labor and hepatitis B carrier). 10 remainders were selected to be a control group. A structured questionnaire was used to investigate for the subjects in October 2008 and three months later. Paired t test was used to analyze the effects of the ginseng product on product satisfaction and quality of life. The results found the ginseng product has a significant effect ( $p<0.05$ ) on self-reported physiological responses for those subjects with management or labor work styles. On the other hand, no significant effect was observed in subjects with hepatitis B carrier or control. In psychological condition, significant effects were observed in male and the three study groups ( $p <0.05$ ). After variables renamed with a principle component analysis, the correlations between product satisfaction and quality of life were observed: 1. positive correlation between satisfaction of “spirit” and life quality of “physical” ( $r=0.550$ ); 2. negative correlation between satisfaction of “spirit” and life quality of “daily life bother” ( $r=-0.367$ ). The study suggests the ginseng product can improve self-reported physiological and psychological status. Product satisfaction is related to quality of life.

**Key words:** Ginseng, Product Satisfaction, Quality of life, Gender, Physiological and Psychological

# 經由 C-H $\cdots$ $\pi$ 及 $\pi\cdots\pi$ 作用力自組裝形成 三維含銅(II)金屬配位化合物構造分析

## Self-assembly of a Copper (II) Complex through C-H $\cdots$ $\pi$ and $\pi\cdots\pi$ Interaction to a 3D Open-framework Structure

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(Received, January 14, 2011; Revised, February 23, 2011; Accepted, March 10, 2011)

**摘要：**將吡啶-3,4-雙羧酸與 NaOH 反應，再與 CuBr<sub>2</sub>·4H<sub>2</sub>O 與 1,10-菲囉啉加水混合，利用水熱反應合成，得到含銅(II)的配位錯合物，其化學式為 {[Cu(pda)(phen)]·H<sub>2</sub>O}<sub>n</sub> (pda = 吡啶-3,4-雙羧酸根, phen = 1,10-菲囉啉)。使用元素分析儀、FT-IR 光譜儀及 X-Ray 晶體繞射儀，測定產物晶體結構及其性質，X-Ray 測定結果顯示錯合物是以銅(II)離子為配位中心，含兩個 O 原子，以及三個 N 原子和一個未配位晶格水分子；分別來自兩個吡啶雙羧酸上的 O 原子，和吡啶雙羧酸上的氮原子及菲囉啉環上的兩個氮原子，配位構成些微扭曲平方角錐型幾何結構。晶體結構由於吡啶雙羧酸以及晶格水分子的分子內氫鍵 (C-H $\cdots$ O) 作用、芳香環之間的  $\pi\cdots\pi$  吸引力以及 C-H $\cdots$  $\pi$  作用力，自組裝成(3-D)三維空間無限延伸的網狀結構，使得此晶體結構很穩定。

**關鍵詞：**水熱合成、吡啶-3,4-雙羧酸、1,10-菲囉啉、氫鍵

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**Abstract:** A metal-organic coordination polymer,  $\{[\text{Cu}(\text{pda})(\text{phen})]\cdot\text{H}_2\text{O}\}_n$  (pda= pyridine-3,4-dicarboxylate, phen = 1,10-phenanthroline), has been hydrothermally synthesized from the reaction of  $\text{CuBr}_2\cdot 4\text{H}_2\text{O}$ , NaOH, 3,4-pdaH<sub>2</sub> and phen. The structure was characterized by elemental analysis, FT-IR and single-crystal X-ray diffraction. The asymmetric unit of the title compound contains a five-coordinate Cu(II) ion with a distorted square pyramidal geometry, defined by three N atoms and two carboxyl-O atoms from chelating 1,10-phenanthroline and pyridine-3,4-dicarboxylate ligands. The asymmetric unit also contains an uncoordinated water molecule. The structure exhibits a two-dimensional layer, which further forms a three-dimensional supramolecular network via weak C–H $\cdots$ O hydrogen bonding,  $\pi\cdots\pi$  stacking interaction and C–H $\cdots\pi$  interaction.

**Key words:** Hydrothermal Synthesis, Pyridine-3,4-dicarboxylic acid, 1,10-phenanthroline, Hydrogen bonding.

# 胎盤素化妝品抗老化功效的評估研究

## Evaluation of the anti-aging effectiveness of placenta extract-containing cosmetic

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(Received, March 22, 2011; Revised, July 13, 2011; Accepted, September 08, 2011)

**摘 要：**隨者年齡增長，皮膚的膠原纖維中的膠原蛋白及彈性蛋白減少，玻尿酸含量降低，使得真皮層的組織失去柔軟性與彈性，結果導致皺紋形成、萎縮、乾燥和不規則色素化現象。化妝品配方中所使用的胎盤素一般認為可能含有維生素、胺基酸、生長因子等成分，故市場中含胎盤素護膚產品常宣稱可以減少細紋，並且防止皮膚過度角質化與老化。然而，截至目前為止，並未有科學研究指出胎盤素對皮膚保養的可靠證據。本研究設計含胎盤素的安定乳霜配方，將胎盤素添加入化妝品配方中，自製乳霜黏度為 2250cps，屬於不油膩延展性乳霜體。經過安定性與安全性貼布試驗後，再利用多功能皮膚測定系統評估此乳霜之抗老化功效。研究結果顯示，十三位健康皮膚受試者（30~60 歲女性）每日兩次塗抹乳霜於全臉皮膚，每週測測量皮膚彈力參數並計算其變化率，結果顯示含胎盤素乳霜能有效增進皮膚彈性。大部分受試者在使用乳霜後，彈力參數 R2, R5 與 R7 之數據提高，而彈力參數 R6 則明顯下降。本研究顯示含胎盤素乳霜有效增進臉部皮膚彈性。後續研究將探討胎盤素抗老化之可能作用機轉。

**關鍵詞：**胎盤素、抗老化、有效性、化妝品、皮膚彈性

**Abstract :** With increasing age, the skin undergoes degenerative changes include loss of elasticity, degeneration of elastic fiber, reduction in collagen and hyaluronic acid content, ultimately leading

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to increased wrinkling, atrophy, dryness and irregular pigmentation. The possible component of placenta extract includes vitamins, amino acid and growth factors. Commercial placenta extract-containing skin care products were claimed to decrease fine wrinkles of skin, prevention of skin over-keratinization and aging. However, there is no science report about the evidence-based skin care effects of placenta extract. A stable cream containing porcine placenta extract was prepared and its viscosity was 2250cps, which mean that cream is an un-oily external cream. After stabilization test and skin patch test, the potential anti-aging efficacy of the designed cream evaluated by multiple-function skin determine system ° Thirteen female volunteers (age 30~60) applied the test cream to face twice daily, the skin elastic parameters R2,R5 and R7 were increased and the parameter R6 was decreased weekly. Our preliminary results indicated that the placenta-content cream improves the face skin elasticity. Further study will be performed to elucidate the possible anti-aging mechanism of placenta extract .

**Key words** : placenta extract 、 anti-aging 、 efficacy 、 cosmetic 、 skin elasticity



# 生產系統瓶頸站有多機台的限制 驅導式排程方法研究

## A Study of TOC Drum-Buffer-ROPE Scheduling Method in a Production System Bottleneck Station with Multiple Machines

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(Received, January 03, 2010; Revised, January 27, 2011; Accepted, February 25, 2011)

**摘要：**在現有的限制理論 (Theory of Constraints, TOC) 的文獻中，大多數的文獻探討的是單一瓶頸機台的限制驅導式排程方法 (Drum-Buffer-Rope, DBR)，探討對於瓶頸有多機台的文獻則較為缺乏。然而在實務上，大多數工廠的瓶頸站卻是多機台的型態，例如半導體的黃光機台，封裝廠的打線或封膠機等，因此如何設計生產系統瓶頸站多機台的瓶頸排程是本研究的重點。瓶頸站有多機台的排程問題，除了如何決定限制資源的產能 (Capacity Constraint Resource, CCR) 機台的訂單排序外，還多了一張訂單要選擇幾台 CCR 機台同時加工，及一

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張訂單要選擇那幾台 CCR 機台加工等需求。本研究針對後兩者需求加以探討，首先提出一套排程方法，其次用一個案例實際說明。本研究在瓶頸站為多機台時所排程的結果，讓每一張訂單有效的在不同的瓶頸機台加工，且離開瓶頸站的時間接近，降低訂單從瓶頸站到下一站的等待時間。

**關鍵詞：**限制理論、限制驅導式排程方法、瓶頸

**Abstract:** Although the Theory of Constraints Drum-Buffer-Rope (TOC DBR) Systems have been studied in these years, the DBR design method for the manufacturing environment with multiple machines in its bottleneck station is still lack. The bottleneck stations with multiple machines are generally in the industry, such as semiconductor wafer manufacturing plants, IC substrate manufacturing plants, or multilayer board manufacturing plants. The scheduling in such an environment, three issues will be confronted: (1) the sequence of orders, (2) the number of machines for an order, and (3) the selection of which machine for an order. A drum development method for manufacturing environments with multiple machines in its bottleneck station is then proposed. Additional, a numeric example is utilized to evaluate the application of the proposed method.

**Key words:** Theory of Constraints, TOC Drum-Buffer-Rope, Bottleneck

# 各國藥品圖像標示之比較

## A Study of Medical Pictogram Labels

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(Received, November 16, 2010; Revised, April 19, 2011; Accepted, August 02, 2011)

**摘 要：**本研究針對臺灣的醫學中心與區域醫院進行醫藥袋圖像標示調查，結果顯示，除了文字的說明，部份醫療院所逐漸開始重視個別族群，隨著病患的個別差異，提供「以圖表意」的標示方式，藉以達成「知圖用藥」的目的。採取方法則施以貼紙、圖章蓋印或圖像印刷於醫藥袋上待電腦作業圈選，此外亦有額外提供書面輔助的衛教單張。由此可見，各家醫院均自有一套因應措施，執行作法上全然不同，當中不乏混合併用的形式。因此，本文經由探討歐美、南非與亞洲的日本等的地區國家，進行藥品圖像標示設計的型態彙整與歸納，同時予以比較設計的差異，提供作為臺灣的醫療機構於醫藥袋圖像標示設計之改善參考，期望民眾前往不同醫院就診時，所領取的醫藥袋圖像標示能達到視覺識別的一致性。

**關鍵詞：**醫藥袋、圖像符號、醫藥標示、藥品標籤、處方藥標示

**Abstract:** This study conducted surveys regarding pictogram labels on medicine bags with medical centers and local hospitals in Taiwan. The result shows that some medical institutions have gradually started to put emphases on individual groups with the change of patient types, by

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adopting labels with descriptions and medical instructions expressed through pictograms besides text. In practice, the methods adopted to use pictograms on labels include using stickers, seals, or printed images on medical bags as options to be circled or checked. There are also patient handouts in written format. Obviously every hospital has its own way on this. Of course, these forms can be mixed to create new ways with different implementation methods. Thus, this study explores the pictogram designs for medical use in Europe, USA, South Africa, and Japan through difference analysis, summarization, and categorization. The result can be considered as references for medical institutions in Taiwan to improve their design in pictogram labels for medical bags. It is expected that when people go to different hospitals for medical advices or treatments, pictogram labels on those bags can be consistent visually.

**Key words:** medicine bag, pictogram, Medical Labels, Drug Labels, Prescription medicine labels

# 經濟全球化與區域化的論辯 —從 Rawls 的正義理論析之 Economical Globalization Versus Regionalization: Analysis From Rawls' Theory of Justice

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(Received, April 20, 2011; Revised, August 01, 2011; Accepted, August 22, 2011)

**摘 要：**在當今全球化的趨勢下，國際經濟整合已然是不可避免的方向；就此面向的發展方面，存在著兩種截然不同的國際建制模式—全球主義與區域主義—全球主義以 WTO 為宗，在既定的規範下，進行全球性的經濟整合；相對地，區域主義則出於國家的需求，繼而逐步跨大為區域的整合機制。然而，究竟循著何種路線發展較符合道德正確下的正義性，是本文所欲論述的核心重點。基於評估正義性的欲求，本文將援引 John Rawls 的正義理論，擴大其正義二原則的規範，而成為檢驗國際建制的正義性標準；歷經特徵轉換之後，筆者歸納出三項評量標準：(1)平等資格原則；(2)機會均等原則；(3)差等原則，據此針對全球與區域主義建制的發展，進行正義性的比較分析，期欲從比較的過程當中，確立符合正義性的國際建制模式。縱觀本文的論述，主要分為四大核心議題：(1)John Rawls 的正義理論解析；(2)國際場域國內化的論證；(3)國際經濟發展的兩種思維；(4)全球與區域主義建制的正義性。在歷經此四階段的推導後，本文發現：基於(1)成員准入資格的廣泛程度；(2)成員參與決策機制的公平性；(3)差等補償機制的法制化，促使得就符合正義性的標準而言，全球主義建制顯然是優於

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區域主義建制。換言之，未來全球化的經濟整合模式，應該朝向以 WTO 建制為核心的全球主義建制的系絡發展較為適宜。

**關鍵詞：**羅爾斯、正義論、國際建制、全球主義、區域主義

**Abstract:** Under the tendency of globalization, the international economy conformity already was the inevitable direction; However, Globalism (e.g. the WTO cooperation pattern), or Regionalism (based on bilateral principle negotiated price pattern), which pattern is more conforming with justness and fairness, is the main discuss in this article. Based on just discussion, this article quoted John Rawls "The Theory of Justice", expanding its 'two principles of justice' to analysis the justness in international system. The author induced three items to comment: (1) The principle of equal qualifications; (2) The principle of equal opportunity; (3) The principle of differential compensation. In the view of development in Globalism and Regionalism, I'd hope to observe the just pattern in international system. This article mainly divides into four core subjects: (1) Analysis of John Rawls' just theory; (2) The proof of international society may regard as the domestic situation; (3) Distinction between Globalism and Regionalism; (4) The justness in two kinds of international system. After above four stage inferential reasoning, this article discovered that, Based on the reason of (1) The widespread degree of member admittance qualifications; (2) The fairness of member participates in the policy-making mechanism; (3) The legalization of compensative mechanism. Globalism is obviously more fair than Regionalism. In other words, this article think that WTO system is more suitable to be the pattern of global economic cooperation.

**Key words :** John Rawls, The Theory of Justice, International System, Globalism, Regionalism