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1,2-雙(4-吡啶)乙烷-1,3-苯二甲酸(1/1)共結晶體的合成及其結構分析

Synthesis and Co-crystal Structure of 1,2-bis(4-pyridyl)ethane-1,3-benzenedicarboxylic acid (1/1)

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摘　要：本研究利用溶劑室溫水熱合成反應，以 1,2-雙(4-吡啶)乙烷和 1,3-苯二甲酸反應形成共結晶體化合物，其化學式[$C_{12}H_{12}N_2 \cdot C_8H_6O_4$]。化合物中含一分子的 1,3-苯二甲酸及一分子的 1,2-雙(4-吡啶)乙烷。1,2-雙(4-吡啶)乙烷分子中兩吡啶環略爲扭轉，其雙面角爲 13.24(9)°。1,3-苯二甲酸羧酸上 H 原子與吡啶環上的 N 原子產生強的氫鍵作用力(O–H···N)，鄰接形成直鍊型氫鍵，平行向量爲 [1 5 1]。結構中含有 COOH···N(吡啶環)氫鍵作用力，以及芳香環上的氫原子與間苯二甲酸上的氧原子產生非典型的分子(內)間氫鍵作用(C–H···O)，以及吡啶環之間的π–π吸引力，[其中心最近距離爲 3.7514(10)Å，兩芳香環的雙面角爲 4.61(9)°]。

關鍵詞：水熱反應、氫鍵、1,2-雙(4-吡啶)乙烷、1,3-苯二甲酸

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Abstract：A co-crystal compound with the empirical formula of [$C_{12}H_{12}N_2 \cdot C_8H_6O_4$], is hydrothermal synthesized from the reaction of 1,2-bis(4-pyridyl)ethane and 1,3-benzenedicarboxylic acid. The title compound contains one 1,3-benzenedicarboxylic acid molecule and one 1,2-bis(4-pyridyl)ethane molecule. The two pyridine rings of the 1,2-bis(4-pyridyl)ethane are twisted to each other by a dihedral angle of 13.24(9)° . The 1,3-benzenedicarboxylic acid molecules are linked by O–H···N hydrogen bonds to 1,2-bis(4-pyridyl)ethane, forming linear hydrogen bonded chains parallel to [1 5 1]. The structure exhibits a hydrogen-bonding network involving COOH···N(pyridyl) , aryl group and carboxylic C–H···O non-classical hydrogen-bonding interactions. In addition, π–π stacking interactions [centroid–centroid distance = 3.7514(10) Å, dihedral angles is 4.61 (9)°] are also present.

Key words：Hydrothermal reaction, Hydrogen bonding, 1, 2-bis (4-pyridyl) ethane, 1,3-benzenedicarboxylic acid

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擴增實境的高效能單一回合投影彩現

Single-Pass Projection Rendering with High Efficiency for AR

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摘　要：本文利用單應性(homography)$\mathbf{A}_{3\times3}$、並以截錐(frustum)透視投影法稍爲修正電腦圖學的3×3投影矩陣P_T，構建一離軸(off-axis)投影矩陣(PT')；再根據屏幕$\pi\equiv z=0$將PT'轉換成4×4齊次(homogenous)座標，以利觀測者移動時(tracker)之追蹤成像。同時也擴展$\mathbf{A}_{3x3}$成齊次座標的$\mathbf{A}_{4\times4}$，以便從正規化後的3D虛像$\mathbf{V}$的映像(m_T)直接計算出投影機上的像素座標(m_P)；又以所構建之主軸校正後(axis-aligned)的矩形S拘束(框住)投影機投射面，隱蔽逾越到屏幕外的影像，所以(1)不會有影像裁切(clipping)現象。爲了達成單一回合方式成像--不需重新取樣(resampling)，(2)不會有圖像混疊(aliasing)或邊緣呈鋸齒形不規則狀(jaggy)，故以一驗證後的比例尺(scale)將$\mathbf{A}_{4\times4}$作深度值近似處理(得$\mathbf{A'}_{4\times4}$)。相較於光亮度處理(lighting)、著色(shading)、紋理處理(texturing)等只是潤飾、使映像更完美，擴增實境最爲根本且重要的是投影彩現。因此本文以避開紋理映對的演算法，不會增加額外代價就能降低彩現的計算負荷，又能校正補償斜投影之成像--只需約略的校準投影機位置，即可保持幾何連續性；又因前述(1)、(2)之利基，也能應用於融入性(immersion)屏幕顯示，且可離線計算透視投影的共線性值進行後續作業，因此比傳統兩回合方式更有效能。

關鍵詞：透視投影、彩現、電腦圖學

Abstract：This study employs existing homography($\mathbf{A}_{3\times3}$) to modify conventional 3×3 projection matrix(P_T) by perspective frustum, and creates an off-axis one(PT'). For tracker's reading, the PT' is transformed into 4×4 homogenous coordinates by calibrating with screen $\pi \equiv z = 0$. Also, we

establish a new version($\mathbf{A}_{4\times4}$) of $\mathbf{A}_{3x3}$ to transform those normalized 3D coordinates done by P_T to the projector pixel coordinates but try to keep the depth values intact. With our constructing an axis-aligned rectangle S on π to bound the projected keystoned area, the method (1) avoids undesired clipping with the near and far display plane. Due to a scale factor we justified, the proposed method converts $\mathbf{A}_{4\times4}$ into $\mathbf{A'}_{4x4}$ which (2) does not introduce resampling artifacts such as aliasing or jaggies. For AR, it is projection rendering that counts, contrasting to lighting, shading and texturing for polishing. So, the study exercises an algorithm which avoids texture mapping to implement $\mathbf{A'}_{4x4}$, and allows rendering correct images by single pass without additional cost even when the projectors are positioned without any precise alignment, oblique projection for example. With (1) and (2) mentioned above, the technique can easily be used in current immersive display system, and indeed is more efficient than two passes.

Key words: Perspective Projection, Rendering, Computer Graphics

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中藥黃芩及其活性成分之抗發炎作用研究

Study on the Anti-inflammatory Effect of Scutellaria Baicalensis Georgi and its Active Constituent

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摘　要：巨噬細胞在生物體內扮演著調控先天免疫及發炎作用反應的重要角色，此種細胞表面有細菌脂多醣 Lipopolysaccharide (LPS)的接受體，可利用 LPS 來誘發老鼠 RAW 264.7 巨噬細胞釋放一氧化氮 (NO)；再以 Griess reation 分析方法，測定 NO 含量變化，可以反映發炎之程度，並得以評估藥物對抗發炎過程的影響。黃芩的主成分爲黃芩素及黃芩苷，本研究藉由 NO 釋放的效應，以體外試驗方式，進行化學成分之抗發炎作用探討。結果顯示，黃芩的 50%乙醇粗抽物及其活性成分黃芩素和黃芩苷都具有抗發炎效果，其對抑制 RAW 264.7 巨噬細胞釋放 NO 的 EC_{50} 值分別爲 0.2mg/mL、28μg /mL 及 22μg /mL。同時，黃芩素和黃芩苷對 NO 生成的抑制效果具有加成性。

關鍵詞: 黃芩、黃芩素、黃芩苷、一氧化氮、抗發炎、巨噬細胞

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Abstract: Macrophages play an essential role in innate immunity and inflammatory responses. Its surface has bacterial lipopolysaccharide (LPS) receptors. The nitric oxide (NO) production which has induced in LPS-stimulated RAW 264.7 cells is quantitatively determined by the Griss reaction method. NO may reflect the degree of inflammation and provide a measure to assess the effect of drugs on the inflammatory process. Main components of *Scutellaria Baicalensis Georgi* are baicalein and baicalein-7-β-D-gluopyranosiduronic acid. In this study, we attempt to investigate the effect of these chemical constituents on anti-inflammation in vitro. The results show that they suppressed NO production in LPS induced RAW 264.7 cells and the EC_{50} values were 0.2mg/mL (50% ethanol crude extract), 28μg/mL(baicalein) and 22μg/mL(baicalein-7-β-D-gluopyranosi duronicacid), respectively. Simultaneously, baicalein and baicalein-7-β-D-gluopyranosiduronic acid have the additive effect to suppress NO production.

Key words: Scutellaria Baicalensis Georgi, Baicalein, Baicalein-7-β-D-gluopyranosiduronic acid, Nitric oxide, Anti–inflammation, Macrophage.

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反式-二(吡啶-4-甲酸)四水鈷(Ⅱ)配位化合物合成與晶體結構分析

Synthesis and Crystal Structure of the Coordination Compound Trans-tetraaquabis (Pyridine-4-Carboxylate-κN)-Cobalt(Ⅱ)

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摘　要：將 $CoBr_2 \cdot xH_2O$ 加吡啶-4-甲酸和乙二胺 (en) 加水混合，利用水熱合成，得到含鈷**(Ⅱ)**的配位化合物，其化學式爲：反式-$[Co(pya)_2(H_2O)_4]$ (pya =吡啶-4-甲酸根)。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。化合物以鈷(Ⅱ)離子爲配位中心，於赤道上反式位置上含兩個吡啶環上的 **N** 原子及兩個配位水分子的 O 原子，而軸上配位兩個水分子的 O 原子，構成六配位的正八面體型的幾何結構，具有 D_{2h} 的對稱性。化合物由於配位水分子以及吡啶-4-甲酸，因分子間的氫鍵作用，以及吡啶環之間的 π…π 吸引力，使得此晶體自組裝成 3-D 無限延伸的網狀結構。

關鍵詞：自組裝、鈷(Ⅱ)錯合物、吡啶-4-甲酸、氫鍵

*Corresponding author

Abstract：A coordination compound with the formula trans-[Co(pya)$_2$(H_2O)$_4$] (pya = pyridine-4-carboxylate), is hydrothermal synthesized from the reaction of $CoBr_2 \cdot xH_2O$, ethylenediamine, and pyridine-4-carboxylic acid. The title compound is fully characterized by X-Ray, FT-infrared and elemental analysis. The title compound, the coordination sphere of the Co(Ⅱ) metal, is octahedral coordination with an approximate D_{2h} symmetry. The arrangements around the Co(Ⅱ) ion is trans-octahedra with two pyridyl nitrogen and two aqua oxygen in the equatorial positions and two aqua oxygen in the axial positions. In addition, the intermolecular O–H···O hydrogen-bonding and π···π stacking interactions further extend the title compound to form a 3-D structure.

Key words：Assembly, Cobalt (Ⅱ) Complex, Pyridine-4-carboxylic acid, Hydrogen bonding.

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品牌形象及產品等級對消費者購買意願之影響－價格折扣干擾效果之探討

The Effect of Brand Image and Product Grade on Consumers' Purchase Intention: The Moderating Role of Price Discount

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摘　要：本研究同時考量品牌形象及產品等級對消費者購買意願之影響，並以價格折扣爲干擾變數。研究結果發現：當產品進行價格折扣時，只有當消費者仍選擇原先計畫購買的產品的情況下，產品進行價格折扣才會影響其對配件的購買意願。而在配件的選擇上，不論產品有無進行價格折扣，消費者對配件的品牌選擇上，均偏好品牌形象較高的品牌。此外，產品進行價格折扣會影響消費者對相同品牌配件之不同產品等級的購買意願。當消費者仍選擇維持原等級的情況下，並不會如未折扣時一樣傾向購買功能等級較高的配件；而當消費者選擇升級的情況下，則與未折扣時相同會傾向購買功能等級較高的配件。最後，如果配件進行價格折扣，則消費者均會偏好較高等級的配件。

關鍵詞：品牌形象、產品等級、購買意願、價格折扣

Abstract: This study aims at exploring the impact of main product and/or accessories price promotions on consumers' purchase evaluation of the accessories. The results show that, in the presence of a main product price promotion, only when consumers maintain their originally intended main product choice would the price promotion affect their accessories price perception, but not when they decide to upgrade from the intended choice. In the selection of accessories,

regardless of main product price cuts, consumers would prefer brands with a stronger image. In addition, a main product price promotion would affect consumers' selection of accessories of different function grades under the same brand: in the scenario where the intended grade is maintained, consumers may not be as likely to prefer accessories of a higher function grade as when there is no price promotion; but where an upgrade is decided on, consumers may be as likely to purchase accessories of a higher function grade as when there is no price promotion. Finally, when the accessories are in price promotion, in all scenarios, consumers would prefer accessories of a higher grade.

Key words：Brand Image, Product Grade, Purchase Intention, Price Discount

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美容 SPA 業組織氣候與創新能力對組織績效的影響

The Impact of Organizational Climate and Innovation Capability on Organizational Performance in Beauty SPA

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摘 要：美容 SPA 提供了一個健康、休閒與放鬆的方法。藉由相關研究方法，本研究利用問卷調查，來瞭解美容 SPA 業的組織氣候、創新能力對組織績效的影響。以台南地區的美容從業人員爲調查對象，隨機抽樣，發放 100 份問卷，回收有效問卷 98 分。再藉由敘述性統計、信度分析、因素分析、典型相關與迴歸分析分析方法分析數據。分析結果如下：

1. 組織氣候對美容 SPA 從業人員創新能力有顯著影響
2. 美容 SPA 從業人員的創新能力對組織績效確實有顯著的影響
3. 組織氣候對公司整體績效的表現有顯著的影響

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關鍵詞：美容 SPA、組織氣候、創新能力、績效

Abstract: The purpose of this study was to explore the impact of organizational climate and innovation capability on organizational performance with the object of employees working in Beauty SPA. Organizational climate was divided into four factors including support, environmental support, resources and emotion. It is an important issue to integrate the members within the organization to promote communication and interaction to improve the officer's willingness to innovate, thereby enhancing performance.

This research takes sample data from the employees of beauty SPA in Tainan by random sampling. With responses from 100 members, and the valid rate was 100%. Using SPSS 12.0 for windows, the data are analyzed through factor analysis, multiple regression analysis and canonical correlation analysis to analysis those data. The results are:

1. Organizational climate had significant and positive effects on innovation capability of employees in Beauty SPA.
2. Innovation capability of employees in Beauty SPA had significant and positive effects on organizational performance.
3. Organizational climate had significant and positive effects on organizational performance.

Key words： Beauty SPA, organizational climate, Innovation Capability, Organizational Performance.

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照顧一位糖尿病患不遵從服藥引發高血糖合併舞蹈症之護理經驗

Nursing Experience of a Medication Non-compliant Patient with Hyperglycemia and Chorea

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摘 要：本文是描述一位第二型糖尿病患者因不遵從服藥血糖控制不佳，導致高血糖合併有舞蹈症之護理經驗。護理期間由 2010 年 11 月 23 日至 12 月 26 日，透過觀察、直接會談與身體評估，並以同理心態度來與個案建立良好之治療性關係，運用紐曼系統模式評估，發現個案護理問題有：現存的危險性體液電解質不平衡、服藥不遵從、知識缺失。透過主動關懷及陪伴，運用傾聽及不批判技巧，給予合宜的護理措施及提供個別性指導，並共同參與治療性計劃，建立正確服藥觀念，協助規則服藥，以減少疾病復發率及再住院率。希望藉由此護理經驗，讓護理人員重視病患不遵從服藥後所引發的後果，發揮其專業角色，協助個案正確處理健康問題。

＊Corresponding author

關鍵詞：糖尿病、舞蹈症、服藥不遵從、護理經驗

Abstract：This paper illustrates the nursing experience of a patient with poorly controlled type 2 diabetes who is poor compliance in medication leading to hyperglycemia and chorea. During the period from November 23 to December 26 in 2010, the author used empathy in building a therapeutic relationship and adopted the Neuman systems model as an assessment tool to collect information through observation, personal interview and physical examination. The patient was identified the following nursing needs: fluid volume deficit, risk for electrolyte imbalance, non-compliance with medication, knowledge deficit. Given the appropriate nursing care using proactive caring, accompanying with listening and non-judgmental skills to patient is important for establishing medication compliance through incorporation with patient in therapeutic plan in order to reduce recurrence and re-admission. Through this nursing experience, nurses should pay attention to the consequence of the medication non-compliance to help patients properly deal with such health problem with their professional roles.

Key words：diabetes mellitus, chorea, medication non-compliance, nursing experience.