Visual Aid
How to make PowerPoint

Reporter : Sin-Shien Lin
Date : 2010.12.07

Important Points

1. ・多圖表、少文字
2. ・排版有順序、邏輯
3. ・內容清楚、讓人感到舒服

Outline

- Individual Component
  - Figure 圖
  - Graph 數據圖
  - Table 表
  - Word 文字
- Overall Layout
  - Alignment 對齊
  - Color 顏色
  - Animation 動畫
  - Number of slides

Figure

- PDF
  - Adobe Acrobat Professional
  - Some PDF Images Extract
  - Print Screen + 小畫家
- Scan
- Draw
  - PowerPoint 2007
  - Photo Impact
  - Photo Shop
  - Solid Work

- 圖案
- SmartArt

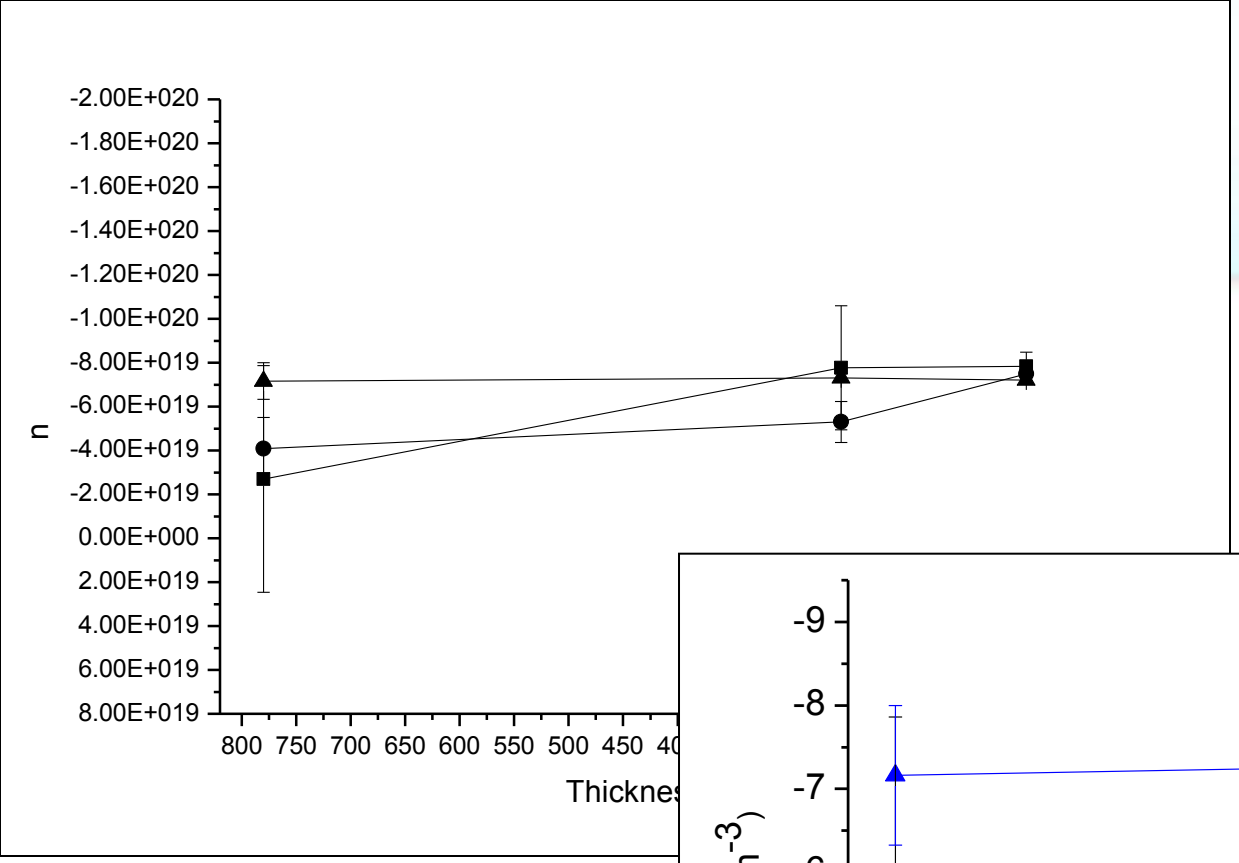
Tips to remember

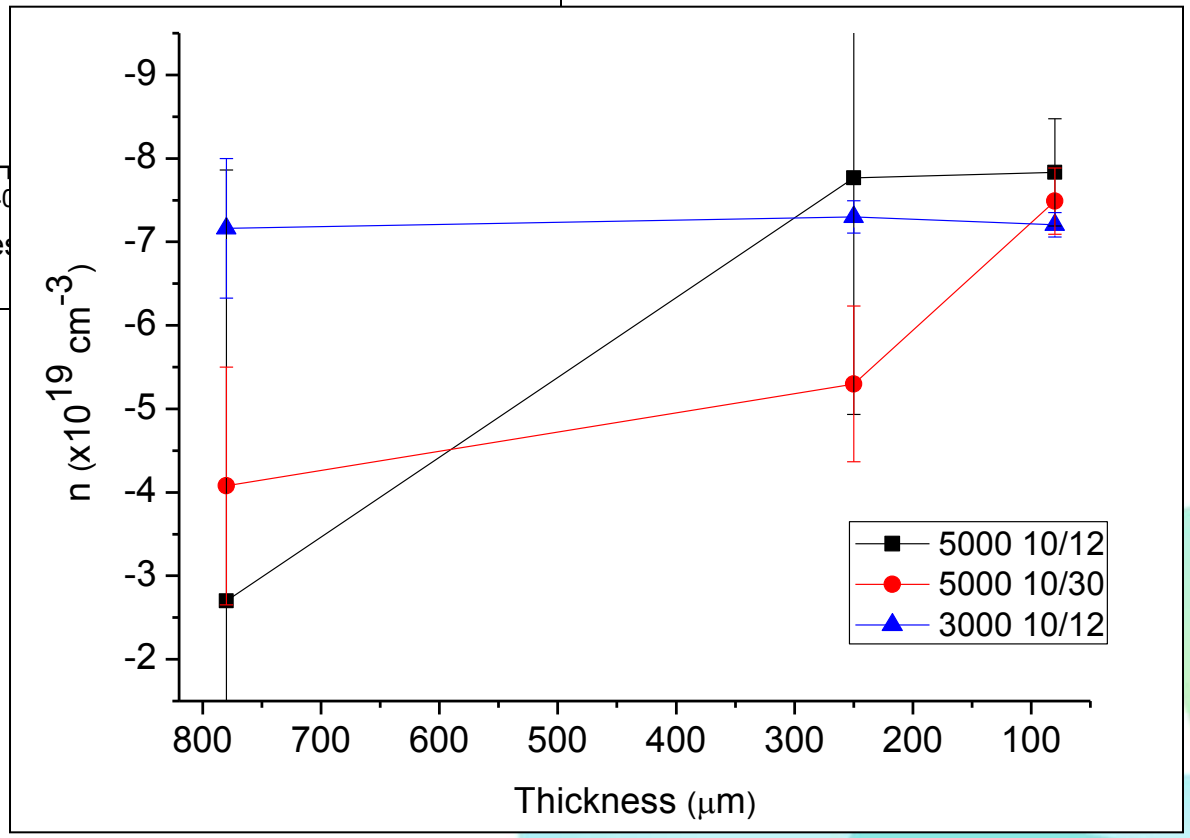
- 圖要轉正，切除不必要的部分
- 亮度對比調好
- 圖解析度要夠
- 標示清楚明確

Graph

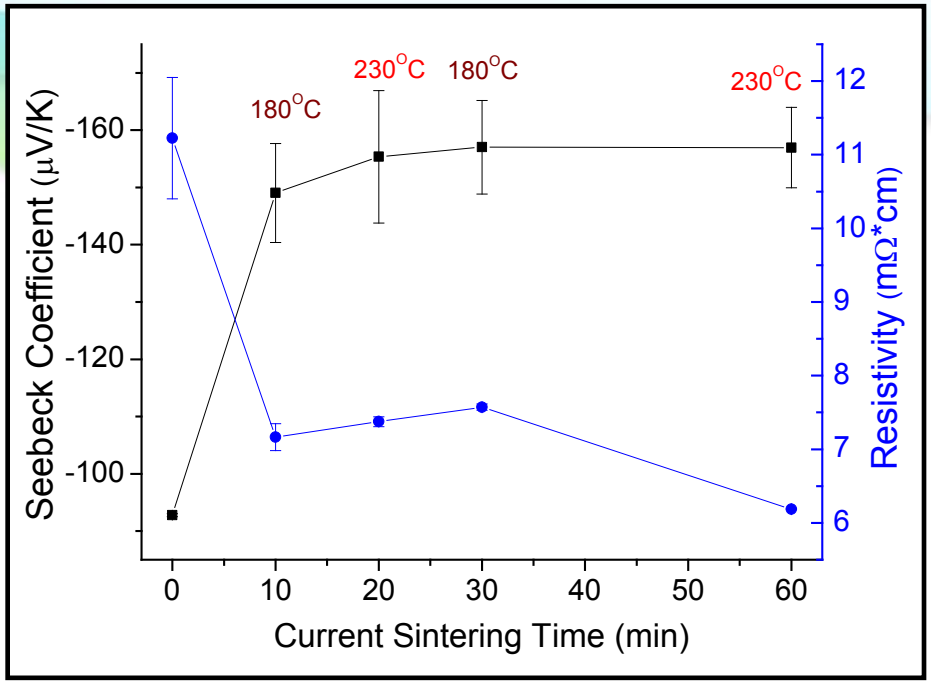
★ Tips to remember

- 曲線最多不要超過四條，並彼此可分清楚。
- 顏色清楚標示、說明明確
- 選擇合適的座標大小、標示清楚
- 加上誤差值

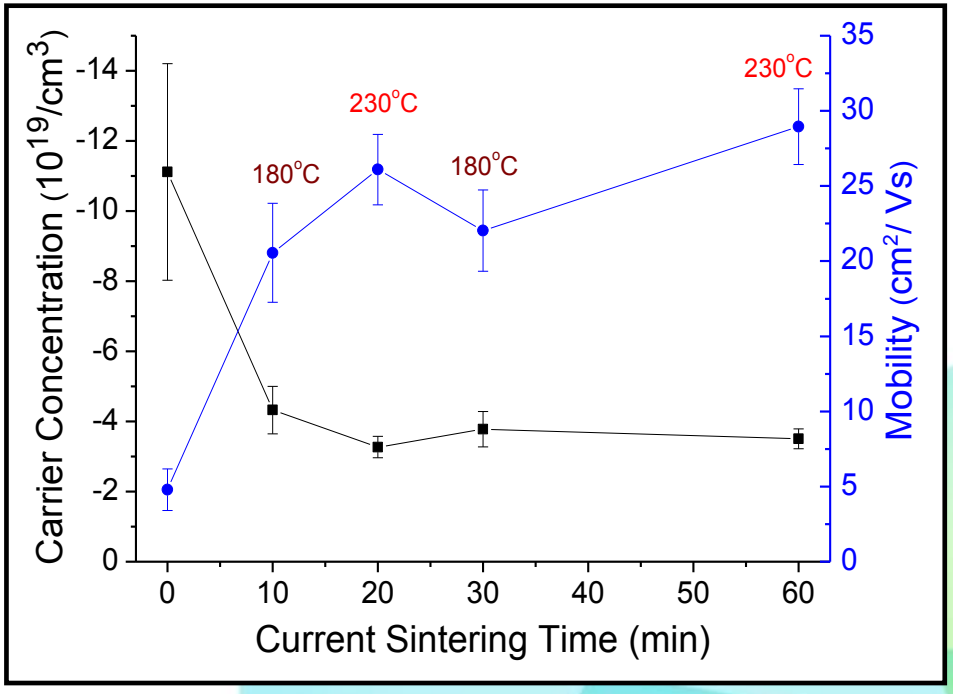

-2.00E+020
-1.80E+020
-1.60E+020
-1.40E+020
-1.20E+020
-1.00E+020
-8.00E+019
-6.00E+019
-4.00E+019
-2.00E+019
0.00E+000
2.00E+019
4.00E+019
6.00E+019
8.00E+019
n
800 750 700 650 600 550 500 450 40
Thickne


-9
-8
-7
-6
-5
-4
-3
-2
n (x10^19 cm^-3)
800
700
600
500
400
300
200
100
Thickness (μm)
5000 10/12
5000 10/30
3000 10/12

Seebeck & Resistivity



Carrier concentration & Mobility



Table

★ Tips to remember

- 橫向盡量不超過四格（四列），
  縱向別超過八格（八行）
- 顏色幫助標示
- 標示清楚

Hot Pressed sintering

	S (μV/K)	n (x10^{19}/cm^3)	μ (cm^2/Vs)	ρ (mΩ cm)
I3 As Hot pressed 250oC 15min 200MPa	-151 ± 1	-4.39 ± 0.5	34 ± 4	4.26 ± 0.01
I3 **Thermally annealed** 250°C 30min	-150 ± 1	-4.04 ± 0.3	38 ± 8 —	4.11 ± 0.01 —
H6 As Hot pressed 250°C 5min 200MPa	-153 ± 2	-4.06 ± 0.6	32 ± 5	4.94 ± 0.05
H6 **Current Sintered** 250°C 30min 200A/cm^2	-150 ± 4	-4.12 ± 0.2	100 ± 5 ↑	1.51 ± 0.02 ↓

Word

Tips to remember

- 多圖少字: 文字大綱、幫助提醒
- 勿使用冗長句子、切勿直接複製論文
- 文字排版、斷句在合適的位置
- 避免中英文混雜
- 字體使用端正、容易閱讀、避免錯字

Sintering Process

Sintering process to lower defects $\mu\uparrow$ $\rho\downarrow$
Better electrical properties

1. Cold pressing + Thermal annealing(≈20h)
   Temperature
   (400~500°C)

2. Hot pressing (30~60min)
   Temperature + Pressure
   (400~500°C) (200~400 MPa)

3. SPS (Spark Plasma Sintering) (5~15min)
   Temperature + Pressure + Current
   (350~450°C) (30~100 MPa)

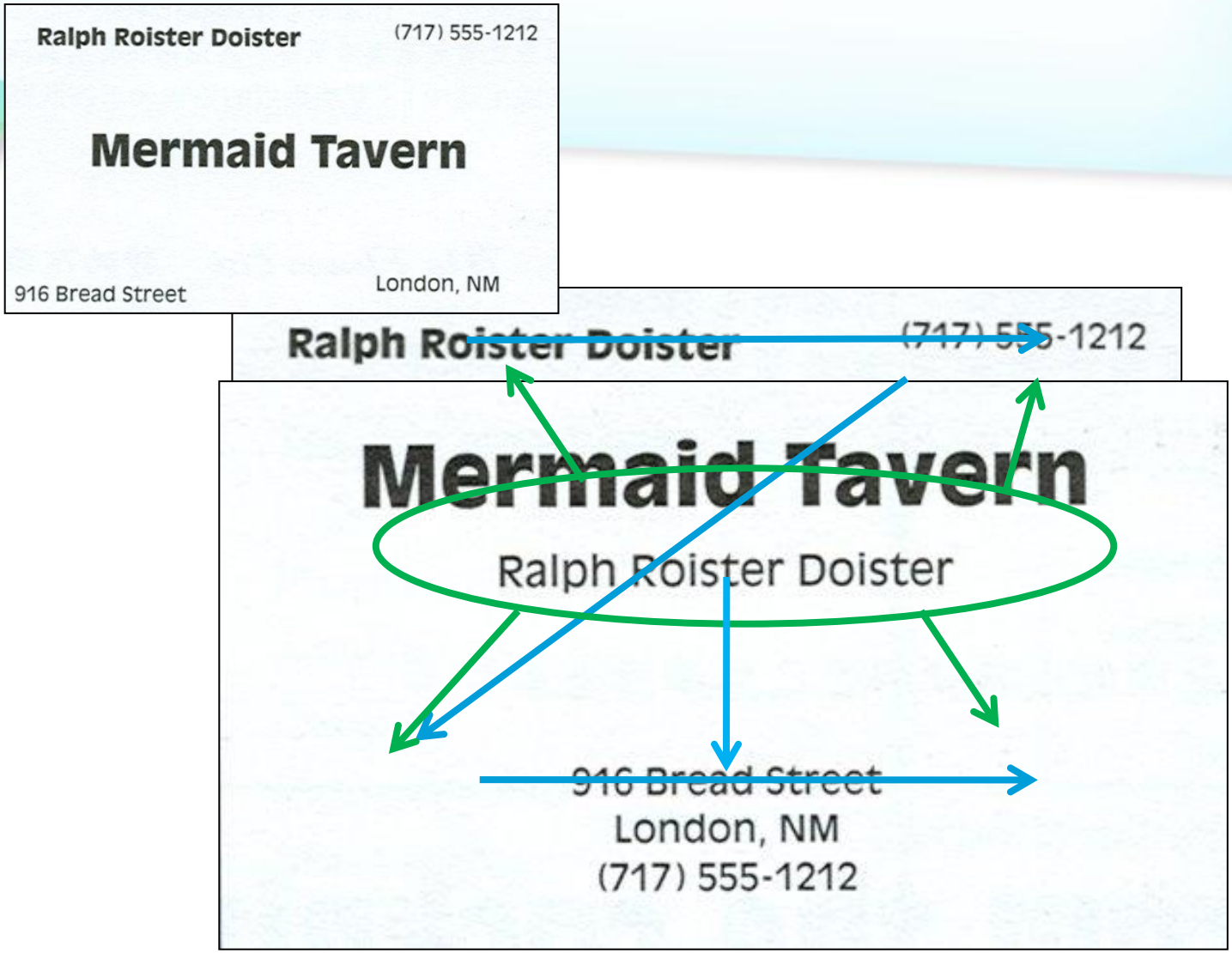
- When Se are in Te site, bond polarity decreases, Bi_{Te} increases [$n = 2 \times 10^{19}/cm^3$] ➡ p-type
- When ball milling V_{Te} increases ➡ n-type
  [$n = -13 \times 10^{19}/cm^3$]
  In this model V_{Te} are predominant. $V_{Te} : V_{Bi} = 3:2$
- When sintering mainly V_{Te} decreases ➡ n ⬇
  [$n = -5 \times 10^{19}/cm^3$] S ⬆
  ρ ⬇

➡ Additional Te to lower V_{Te} ➡ n ⬇ S ⬆

Alignment

Tips to remember

- 對齊同一條基準線、幫助閱讀
- 同一主題放在一起
  避免所有項目同間距
- 不要怕留白、適度分配空間


Ralph Roister Doister
(717) 555-1212
Mermaid Tavern
916 Bread Street
London, NM
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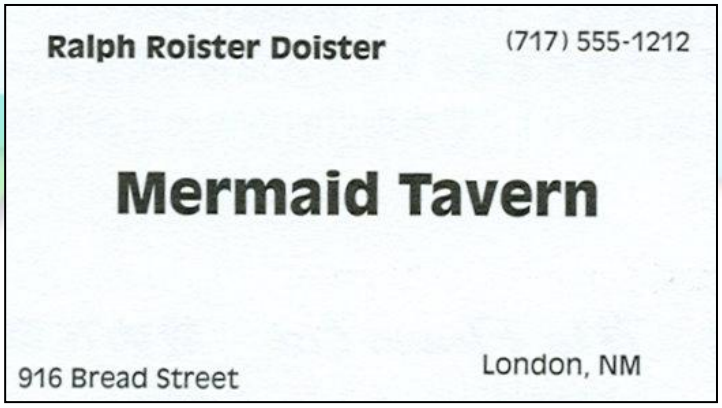
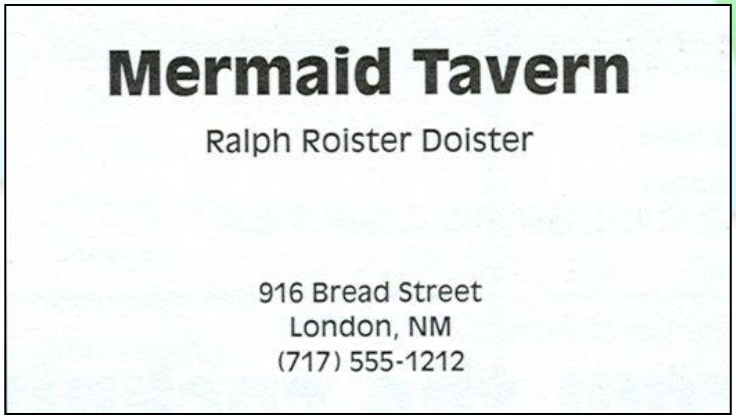
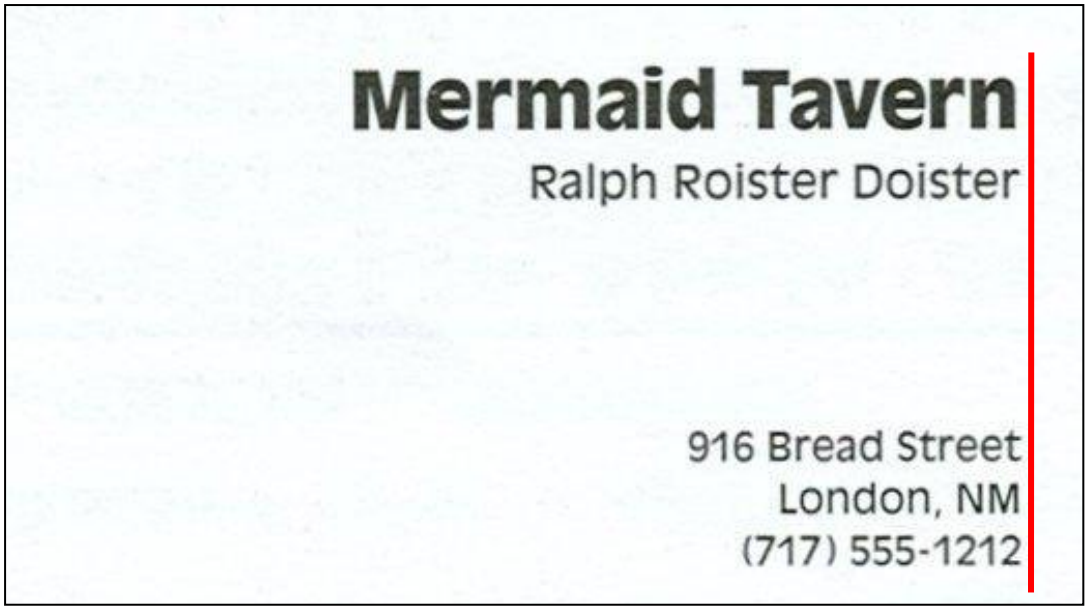






Link the upper and bottom part

Chamber Concert Series

Alexander String Quartet

Mozart, K387, Bartok#3, Beethoven, Opus 59 #1
Sam Pritchert & Ethel Libitz, violins;
Sandra Yarbrough, viola; Mark Wilson, cello
Friday, February 8, 8 P.M.

Trio Artaria

Beethoven "Archduke" Trio,
and trios by Haydn, Schoenberg and Magnard
Richard Samson Norartz, violin
Friday, March 1, 8 p.m.
Reception following concert in Egley Art Gallery

Santa Rosa Chamber Players

Brahms G Minor Piano Quartet, Schubert Sonata
Polly Hollyfield, violin; Linda Batticioli, viola;
Norinne Antiqua-Tempest, cello;
Margaret Park-Raynolds, flute; Robin Plantz, piano
Friday, April 26, 8 p.m.

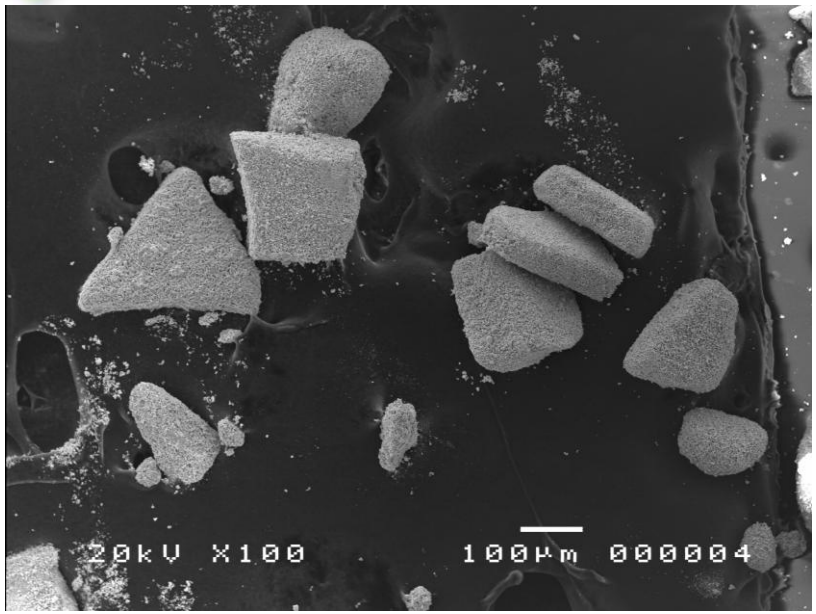
Egley Junior College
All concerts in Newman Auditorium, Emeritus Hall
Community Education
Tickets $10 and $8
For ticket information phone 555.1212

Nano powder reduction

Before

O	40.02%
Te	37.19%
Sb	17.49%
Bi	5.31%

H_2 350°C 6h



O	16.18%
Bi	8.57%
Sb	24.66%
Te	50.59%

Appearance

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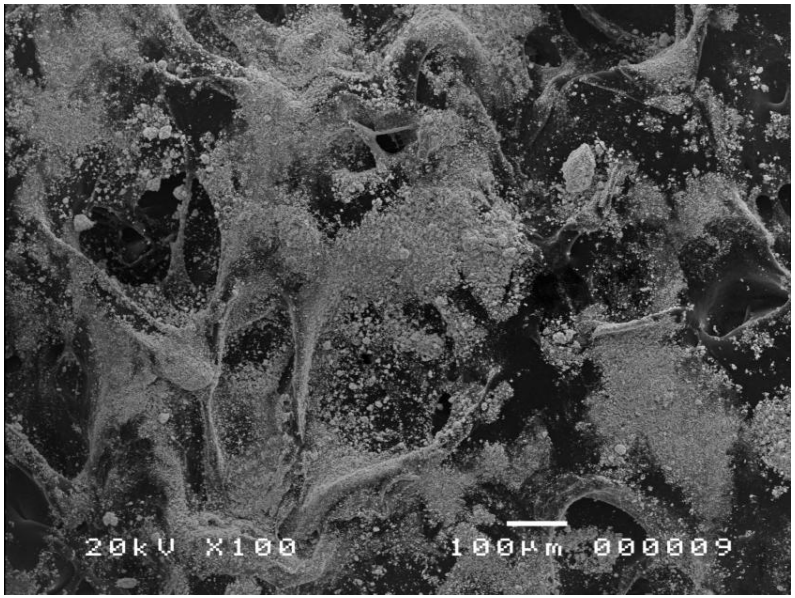

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Sb	19.17%
Te	43.64%
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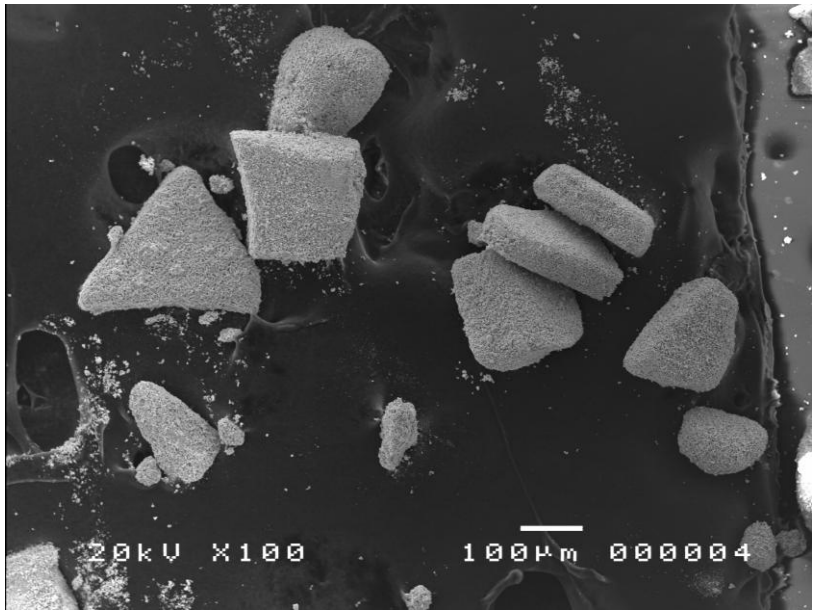

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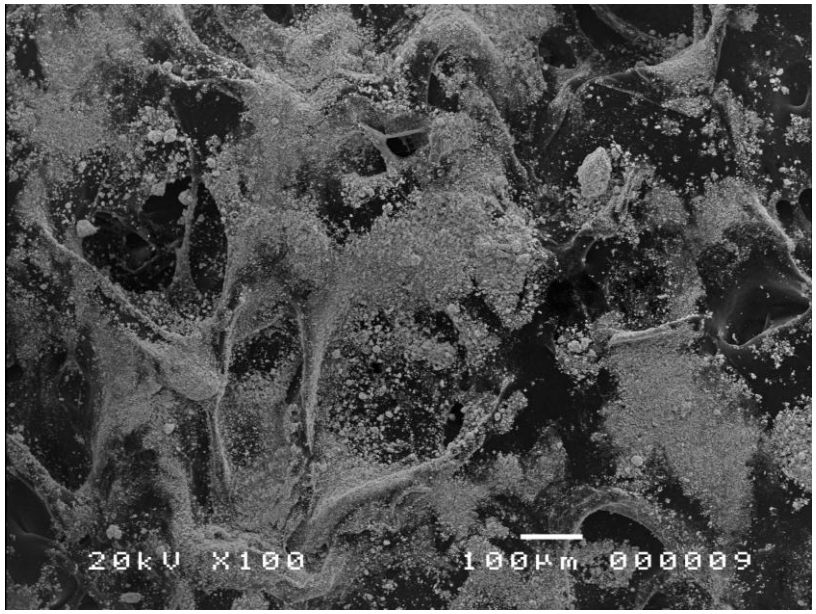

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Appearance

Color

★ Tips to remember

- 背景不要過於複雜
- 顏色幫助閱讀、標示重點
- 同一頁中、顏色勿超過四種
  一份報告中、使用同一色系
- 投影顏色清楚舒服

Animation

Tips to remember

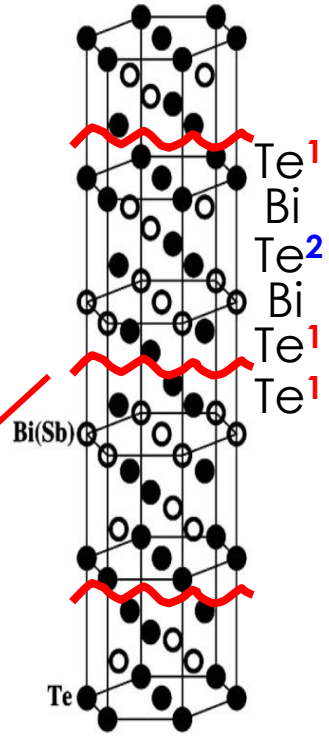
- 當內容物太多時、幫助分段閱讀
- 做成動畫，幫助理解
- 使用“出現”動畫，避免華麗的效果
- 適量就好

Motivation

- **Ingot melting**
  Traditional single crystal material has good electrical properties

BUT

Very brittle, hard to shape
➡ Weak Van Der Waals bonding of Te^1-Te^1



Guofeng Wang, PHYSICAL REVIEW B **76**, 075201 (2007)

- **Powder metallurgy (nano-grain)**
  - Greater mechanical strength
  - Phonon scattering for lower thermal conductivity

BUT

Low electrical properties with powder metallurgy

Hot Pressed sintered

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How many slides should I have ?

- 不是「絕對」必要的投影片或圖表，不要放。
- 一般，每張約1~2分鐘
  至少要停留20秒的時間、否則合併會比較好
- 不重要的圖，放在最後附錄
- 使用超連結，勿跳出投影片 。

Tips for PowerPoint

- F5 從第一張放映 / Shift+F5 從目前放映
- B 關掉投影 / W 開白板

Important Points

1. ・多圖表、少文字
2. ・排版有順序、邏輯
3. ・內容清楚、讓人感到舒服