Academic Writings and Presentations

Formats and Tools

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Softwares

- **Microsoft Word**
- **PowerPoint**
- **Origin / Matlab / Excel**
- **Photoshop / ImageJ**
- **...**
- ***Always format your report before you send it to your advisors!***

Word Document

PERSONAL STATEMENT

I am an associate professor in the Department of Electronic Engineering at Tsinghua University, China. My current research interests are primarily in the exploration of implantable micro- and nano-scale optoelectronic devices, to enable high performance and versatile applications in biomedicine. In particular, I am focused on the development of novel microscale optoelectronic devices for advanced optical neural interfaces. Since 2018, I have published more than papers in peer-reviewed

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Be consistent with your format, and follow the guidelines

Word Document

> REPLACE THIS LINE WITH YOUR PAPER IDENTIFICATION NUMBER (DOUBLE-CLICK HERE TO EDIT) < 1

Preparation of Papers for IEEE TRANSACTIONS and JOURNALS (May 2007)

First A. Author, Second B. Author, Jr., and Third C. Author, *Member, IEEE*

***Abstract*—These instructions give you guidelines for preparing papers for IEEE TRANSACTIONS and JOURNALS. Use this document as a template if you are using Microsoft *Word* 6.0 or later. Otherwise, use this document as an instruction set. The electronic file of your paper will be formatted further at IEEE. Define all symbols used in the abstract. Do not cite references in the abstract. Do not delete the blank line immediately above the abstract; it sets the footnote at the bottom of this column.**

***Index Terms*—About four key words or phrases in alphabetical order, separated by commas. For a list of suggested keywords, send a blank e-mail to keywords@ieee.org or visit http://www.ieee.org/organizations/pubs/ani_prod/keywrd98.txt**

I. INTRODUCTION

THIS document is a template for Microsoft *Word* versions 6.0 or later. If you are reading a paper or PDF version of this document, please download the electronic file, TRANS-JOUR.DOC, from the IEEE Web site at http://www.ieee.org/web/publications/authors/transjnl/index.html so you can use it to prepare your manuscript. If you would prefer to use LATEX, download IEEE's LATEX style and sample files from the same Web page. Use these LATEX files for formatting, but please follow the instructions in TRANS-JOUR.DOC or TRANS-JOUR.PDF.

If your paper is intended for a *conference*, please contact your conference editor concerning acceptable word processor formats for your particular conference.

When you open TRANS-JOUR.DOC, select "Page Layout" from the "View" menu in the menu bar (View | Page Layout),

which allows you to see the footnotes. Then, type over sections of TRANS-JOUR.DOC or cut and paste from another document and use markup styles. The pull-down style menu is at the left of the Formatting Toolbar at the top of your *Word* window (for example, the style at this point in the document is "Text"). Highlight a section that you want to designate with a certain style, then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. **Do not change the font sizes or line spacing to squeeze more text into a limited number of pages.** Use italics for emphasis; do not underline.

To insert images in *Word*, position the cursor at the insertion point and either use Insert | Picture | From File or copy the image to the Windows clipboard and then Edit | Paste Special | Picture (with "float over text" unchecked).

IEEE will do the final formatting of your paper. If your paper is intended for a conference, please observe the conference page limits.

II. PROCEDURE FOR PAPER SUBMISSION

A. Review Stage

Please check with your editor on whether to submit your manuscript as hard copy or electronically for review. If hard copy, submit photocopies such that only one column appears per page. This will give your referees plenty of room to write comments. Send the number of copies specified by your editor (typically four). If submitted electronically, find out if your editor prefers submissions on disk or as e-mail attachments.

If you want to submit your file with one column electronically, please do the following:

--First, click on the View menu and choose Print Layout.

--Second, place your cursor in the first paragraph. Go to the Format menu, choose Columns, choose one column Layout, and choose "apply to whole document" from the dropdown menu.

--Third, click and drag the right margin bar to just over 4 inches in width.

The graphics will stay in the "second" column, but you can drag them to the first column. Make the graphic wider to push out any text that may try to fill in next to the graphic.

B. Final Stage

When you submit your final version (after your paper has been accepted), print it in two-column format, including figures and tables. You must also send your final manuscript on a disk, via e-mail, or through a Web manuscript submission system as directed by the society contact. You

Manuscript received October 9, 2001. (Write the date on which you submitted your paper for review.) This work was supported in part by the U.S. Department of Commerce under Grant BS123456 (sponsor and financial support acknowledgment goes here). Paper titles should be written in uppercase and lowercase letters, not all uppercase. Avoid writing long formulas with subscripts in the title; short formulas that identify the elements are fine (e.g., "Nd–Fe–B"). Do not write "(Invited)" in the title. Full names of authors are preferred in the author field, but are not required. Put a space between authors' initials.

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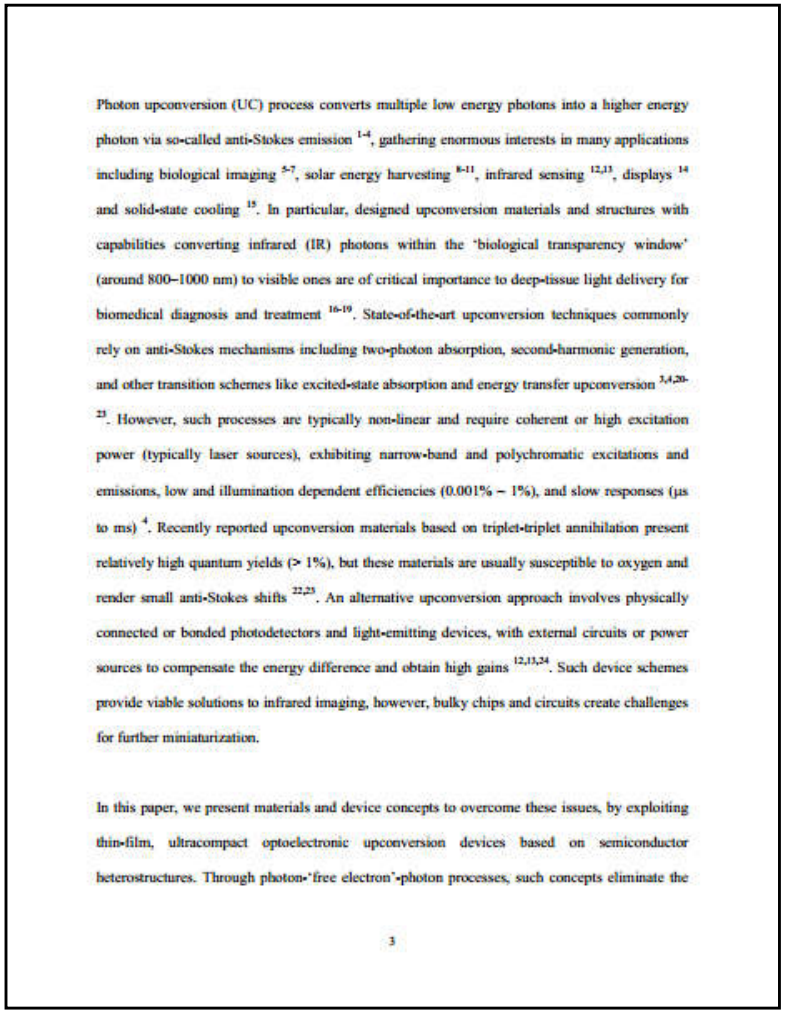
S. B. Author, Jr., was with Rice University, Houston, TX 77005 USA. He is now with the Department of Physics, Colorado State University, Fort Collins, CO 80523 USA (e-mail: author@lamar.colostate.edu).

T. C. Author is with the Electrical Engineering Department, University of Colorado, Boulder, CO 80309 USA, on leave from the National Research Institute for Metals, Tsukuba, Japan (e-mail: author@nrim.go.jp).



Photon upconversion (UC) process converts multiple low energy photons into a higher energy photon via so-called anti-Stokes emission [1-4], gathering enormous interests in many applications including biological imaging [5-7], solar energy harvesting [8-11], infrared sensing [12,13], displays [14] and solid-state cooling [15]. In particular, designed upconversion materials and structures with capabilities converting infrared (IR) photons within the 'biological transparency window' (around 800–1000 nm) to visible ones are of critical importance to deep-tissue light delivery for biomedical diagnosis and treatment [16-19]. State-of-the-art upconversion techniques commonly rely on anti-Stokes mechanisms including two-photon absorption, second-harmonic generation, and other transition schemes like excited-state absorption and energy transfer upconversion [3,4,20-23]. However, such processes are typically non-linear and require coherent or high excitation power (typically laser sources), exhibiting narrow-band and polychromatic excitations and emissions, low and illumination dependent efficiencies (0.001% – 1%), and slow responses (μs to ms) [4]. Recently reported upconversion materials based on triplet-triplet annihilation present relatively high quantum yields (> 1%), but these materials are usually susceptible to oxygen and render small anti-Stokes shifts [22,23]. An alternative upconversion approach involves physically connected or bonded photodetectors and light-emitting devices, with external circuits or power sources to compensate the energy difference and obtain high gains [12,13,24]. Such device schemes provide viable solutions to infrared imaging, however, bulky chips and circuits create challenges for further miniaturization.

In this paper, we present materials and device concepts to overcome these issues, by exploiting thin-film, ultracompact optoelectronic upconversion devices based on semiconductor heterostructures. Through photon-'free electron'-photon processes, such concepts eliminate the

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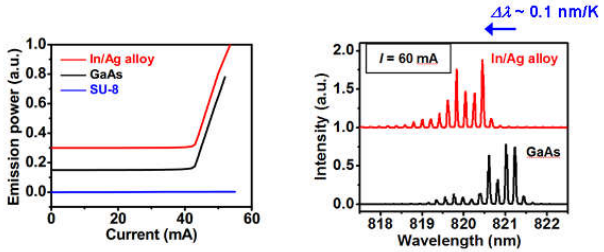
IEEE Template
double-column, single-spaced

ACS Template
single-column, double-spaced

PowerPoint Slides

An example slide

- Lasers on different substrates
  - electrical injection
  - continuous wave operation at room temperature



X. Sheng, *et al.*, *Laser & Photon. Rev.* **9**, L17 (2015)

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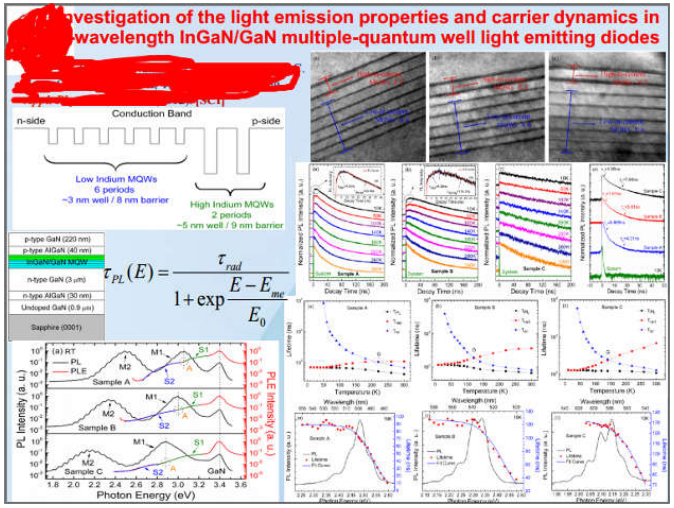
Next Week's Plan

- Colormap.
- Simulate 10000 rays.



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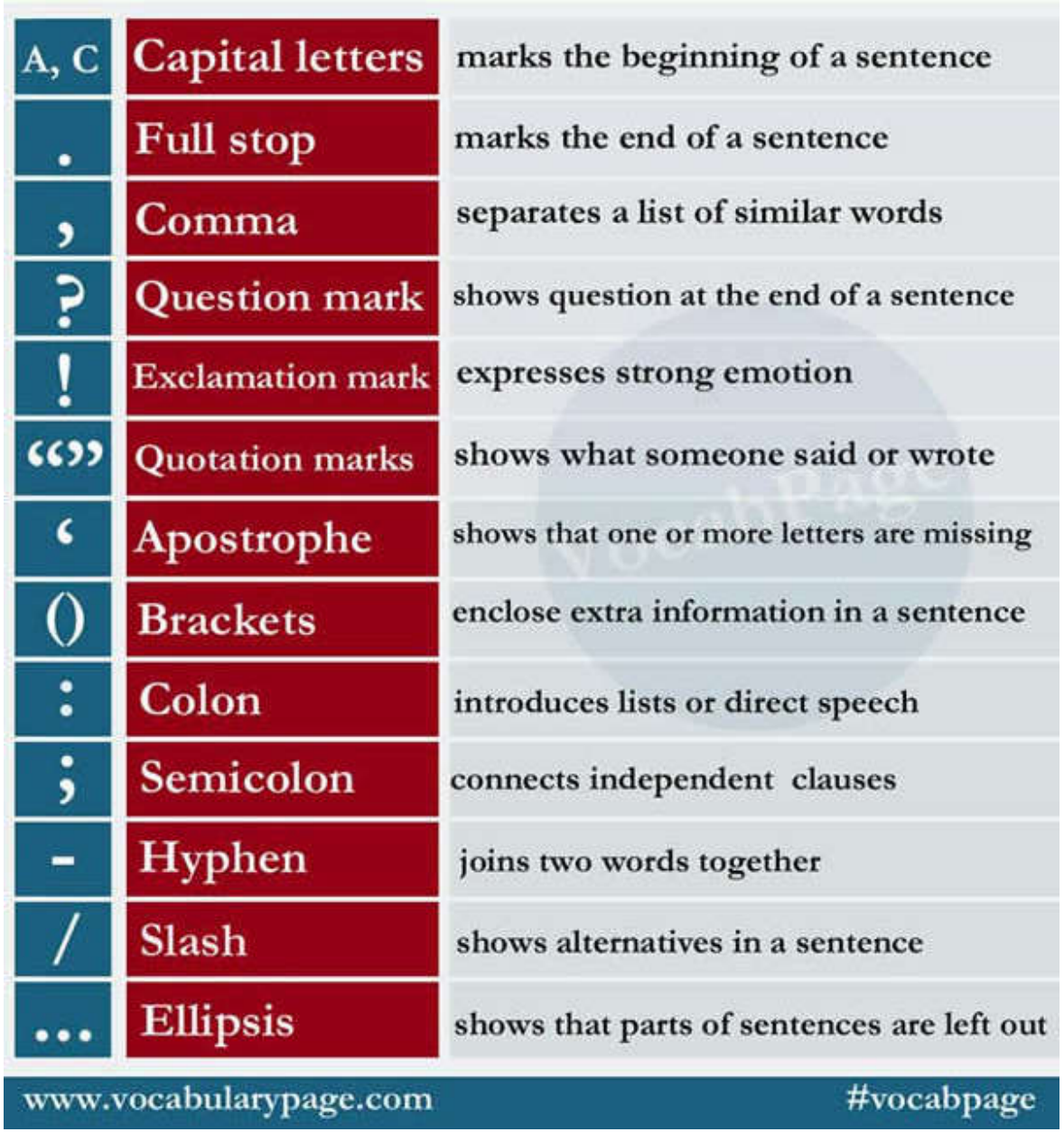
- Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.
- Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.
- Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna.
- Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.
- Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci.

Punctuations



A, C	Capital letters	marks the beginning of a sentence
.	Full stop	marks the end of a sentence
,	Comma	separates a list of similar words
?	Question mark	shows question at the end of a sentence
!	Exclamation mark	expresses strong emotion
“”	Quotation marks	shows what someone said or wrote
‘	Apostrophe	shows that one or more letters are missing
()	Brackets	enclose extra information in a sentence
:	Colon	introduces lists or direct speech
;	Semicolon	connects independent clauses
-	Hyphen	joins two words together
/	Slash	shows alternatives in a sentence
...	Ellipsis	shows that parts of sentences are left out

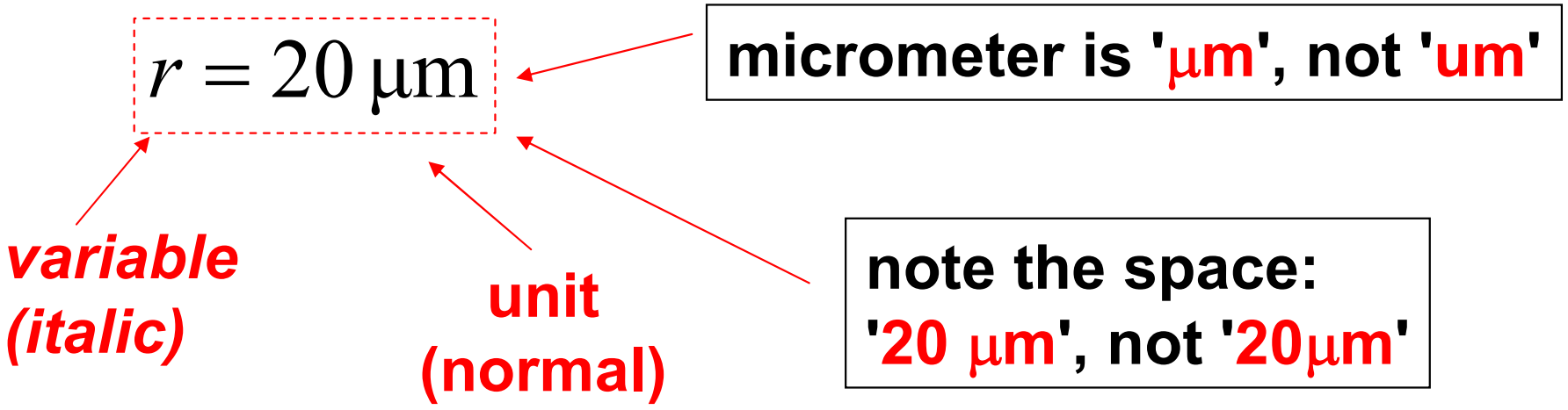
Punctuations ?

- Birds fly _ but fish swim.
- Birds fly _ however, fish swim.
- Birds fly _ However, fish swim.
- His theory _ in my opinion _ is wrong.
- There are three kids _ Tom _ Tim _ and Bob.
- There are three kids _ Tom is from USA _ Tim is from UK _ and Bob is from France.

comma ,
period .
semi-colon ;
colon :

Special symbols

- **Math types**
  - use professional equation editors



- **Greek symbols**
  - 'symbol' font in MSWord
  - abcdef … -> αβχδεφ …

Special symbols

- -, –, –, —
  - - hyphen solid-state physics
  - – minus $x - y = z$
  - – en dash Albert Einstein (1879–1955), page 1–5
    current–voltage curve
  - — em dash Albert Einstein—a great scientist

  - Lennard-Jones potential, Fermi–Dirac distribution

- do not confuse English and Chinese symbols
  - 电子，光子 full-width characters (全角字符)
  - electrons, photons. half-width characters (半角字符)

Italic fonts

- **Emphasis**
  - **This is the most important part.**
  - **This is *the* most important part**
- **Math variables / symbols**
  - $a^2 + b^2 = c^2$
- **Book or paper title**
  - **Einstein's paper *On the Electrodynamics of Moving Bodies***
- **Latin phrases**
  - ***et al.*, *per se*, *in vivo*, ...**
- *中文不用斜体字*

Latin Phrases

- ***per se*** **intrinsically**
- **e.g.** **for example**
- **i.e.** **that is**
- **p.s.** **in addition**
- ***in vivo*** **in living animals**
- **...**

http://users.accesscomm.ca/nsalway/latin.html

Citation Format

- **Follow the journal standard format**
- **Citation**
  - **[1], [2], ...**
  - **[Author, Year]**
- **Reference**
  - **author, title, journal, volume, page, year, ...**

X. Sheng, *et al.*, *Laser & Photon. Rev.* 9, L17 (2015)

X. Sheng, *et al.*, *Laser & Photon. Rev. 2015,* 9, L17

...

Citation Format

- **Cite references correctly**

[10] studies the Hall effect in semiconductors. 

The Hall effect in semiconductors has been studied previously [10]. 

Zhang, *et al.* studied the Hall effect in semiconductors [10]. 

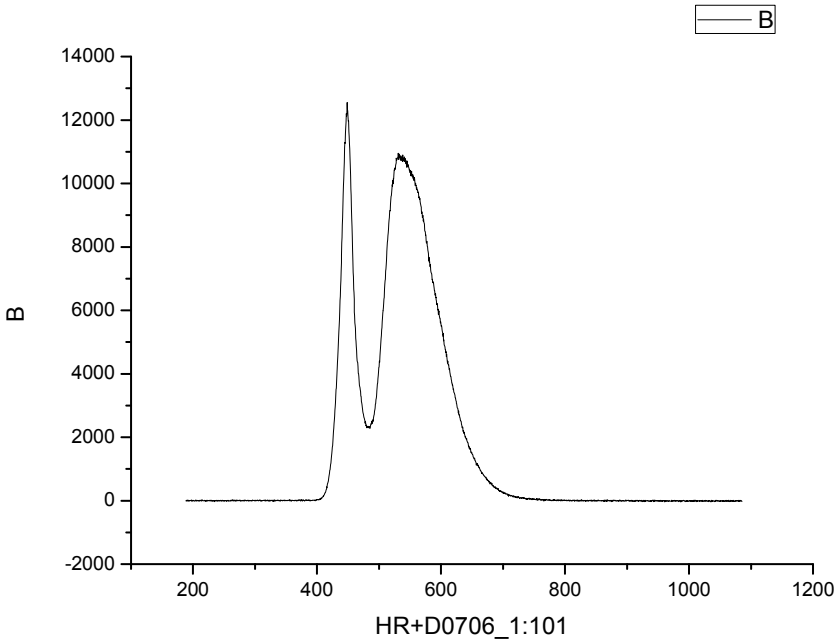
Reference Management

- Endnote
- Mendeley
- ...

Data Preparation

- **Matlab**
- **Origin**
- **Excel**
- **...**
- ***NEVER falsify or manipulate images / data***

Data Plot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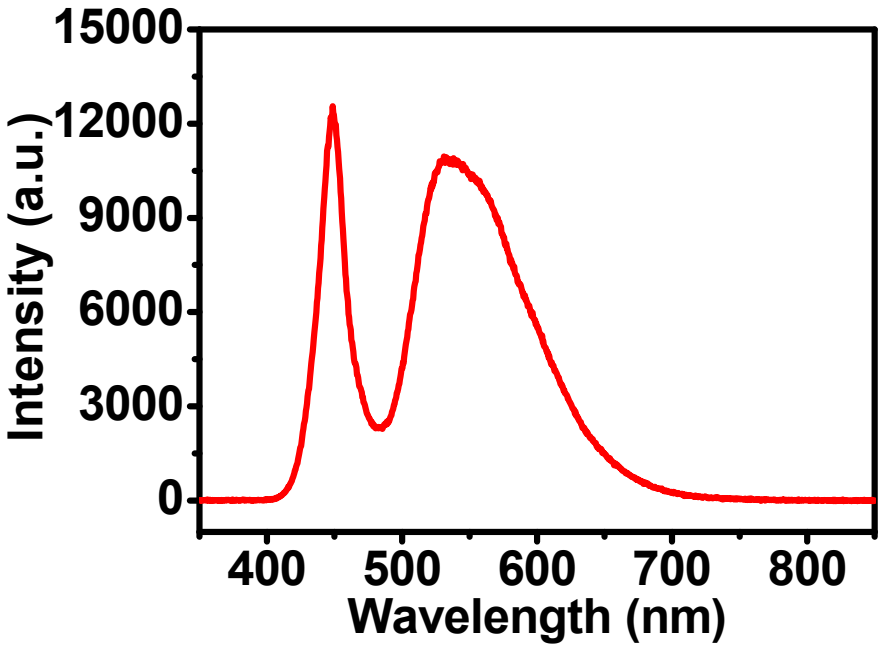
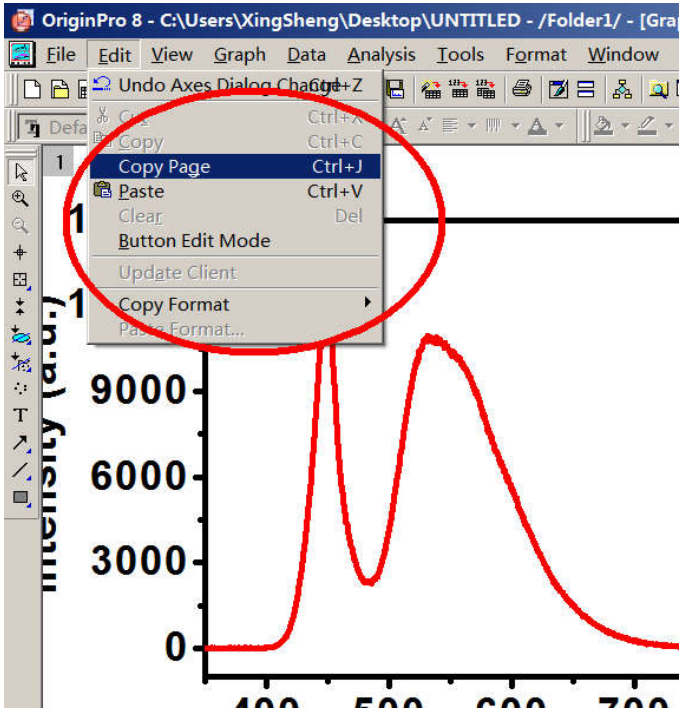
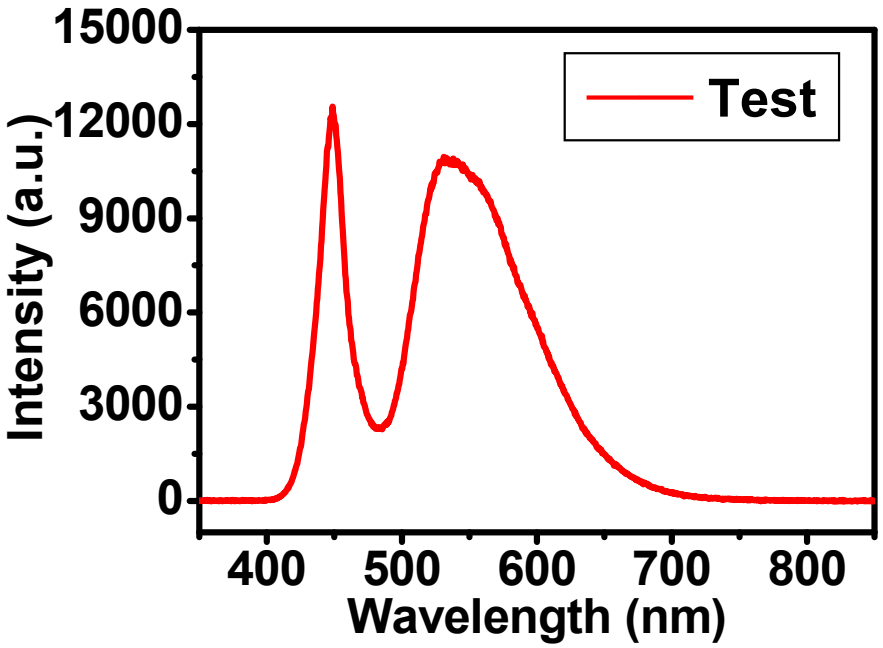

15000
12000
9000
6000
3000
0
Intensity (a.u.)
400
500
600
700
800
Wavelength (nm)

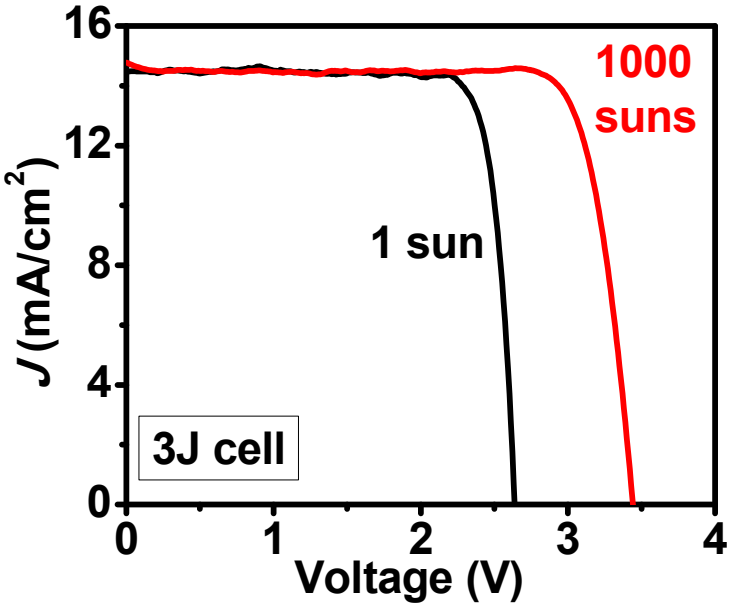
Data Plot

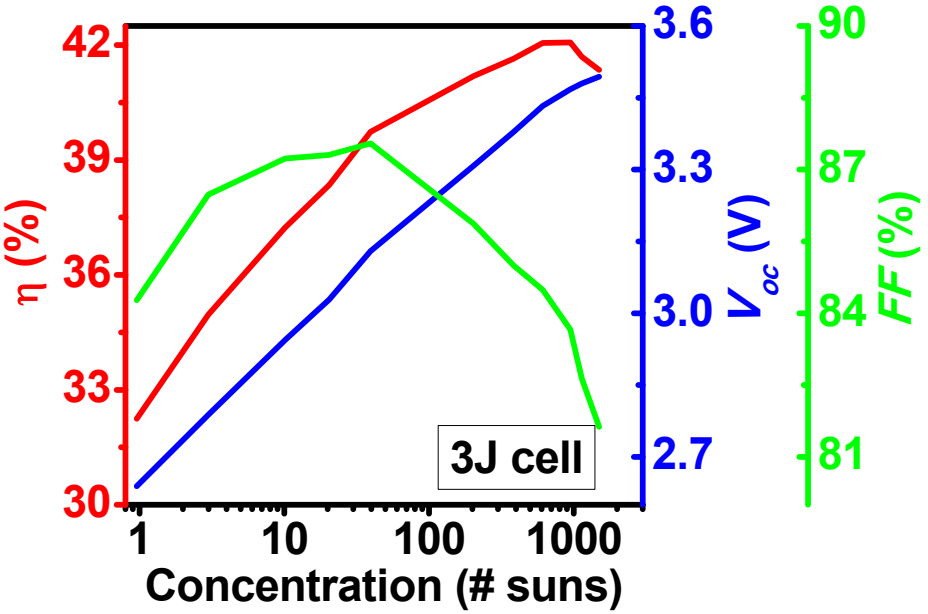
- Copy the page into PPT, so you can directly edit the plot by double clicking it in PPT
- You can add more text in PPT

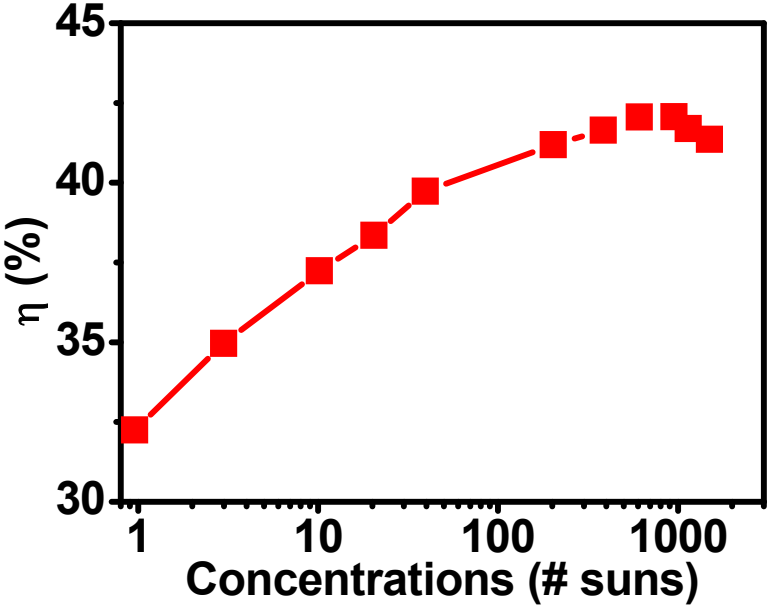




Some Examples







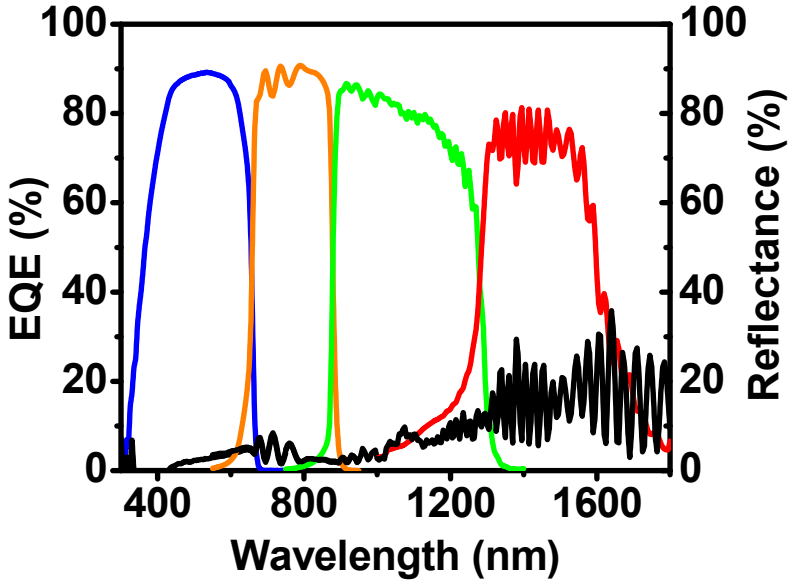


Image Process

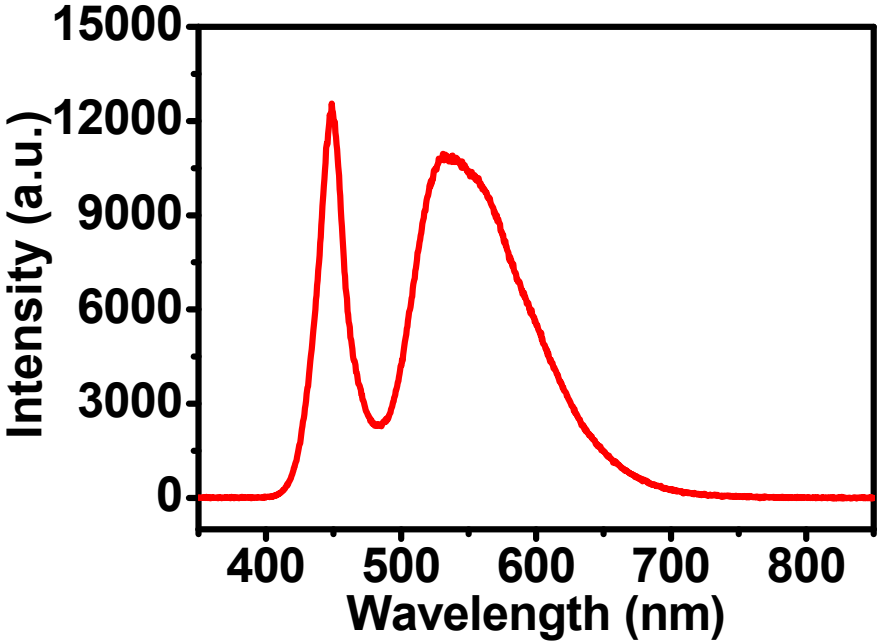
- **Photoshop**
- **ImageJ**
- **Matlab**
- **...**
- ***NEVER falsify or manipulate images / data***

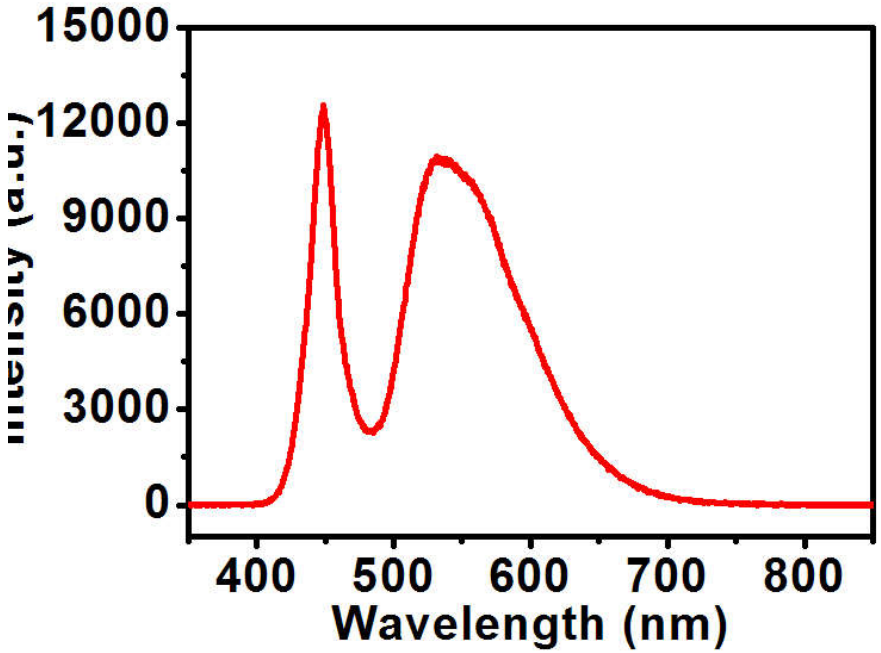
Vector graphs vs. Bitmap graphs

- vector graphs
  - emf, wmf, eps, ...
  - used for data plot, texts, drawings, ...

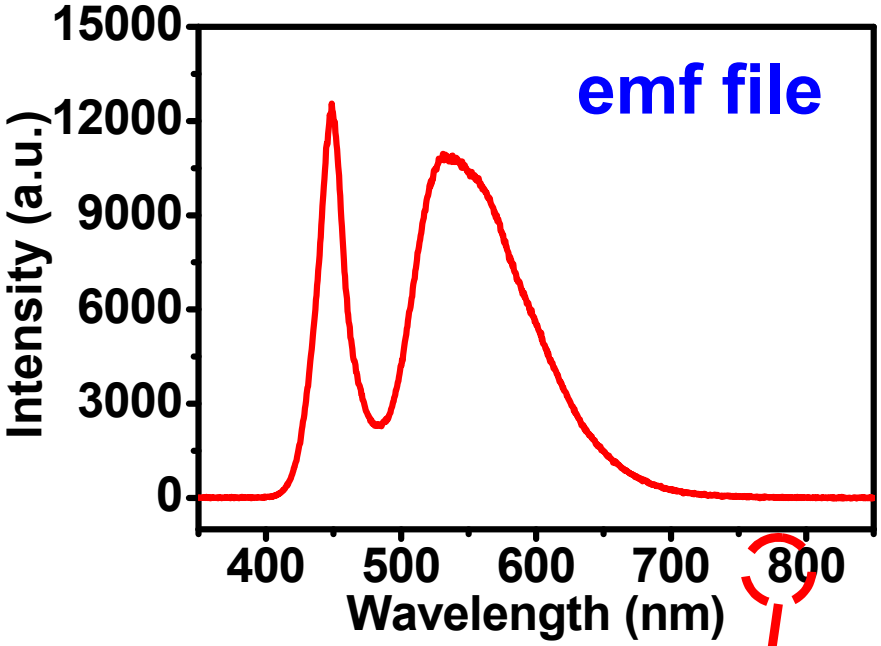
- bitmap graphs
  - jpg, png, tiff, ...
  - used for photos, images, ...

Vector graphs vs. Bitmap graphs

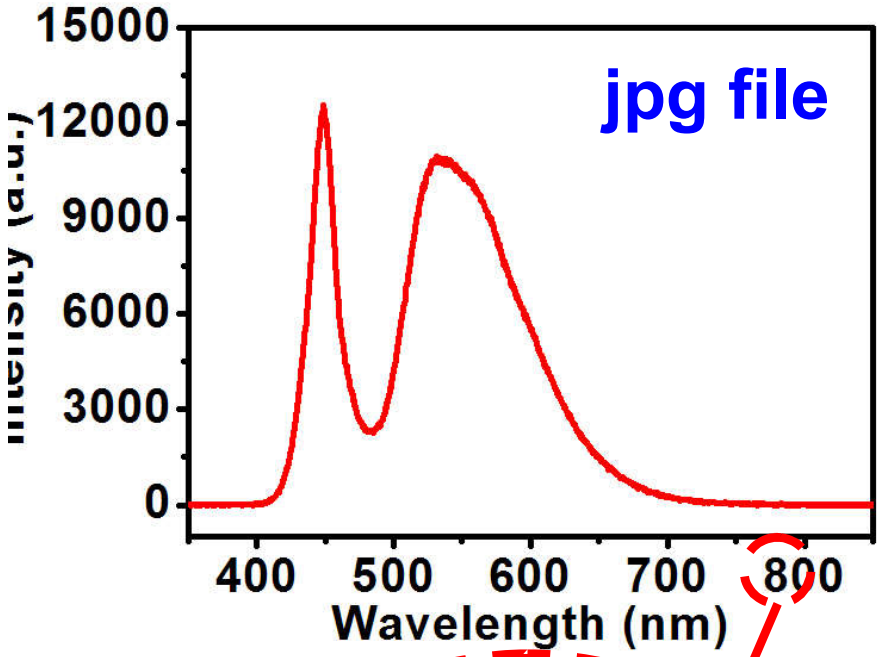




Vector graphs vs. Bitmap graphs



vector graph



bitmap graph

Image Adjustment

Image Adjustment

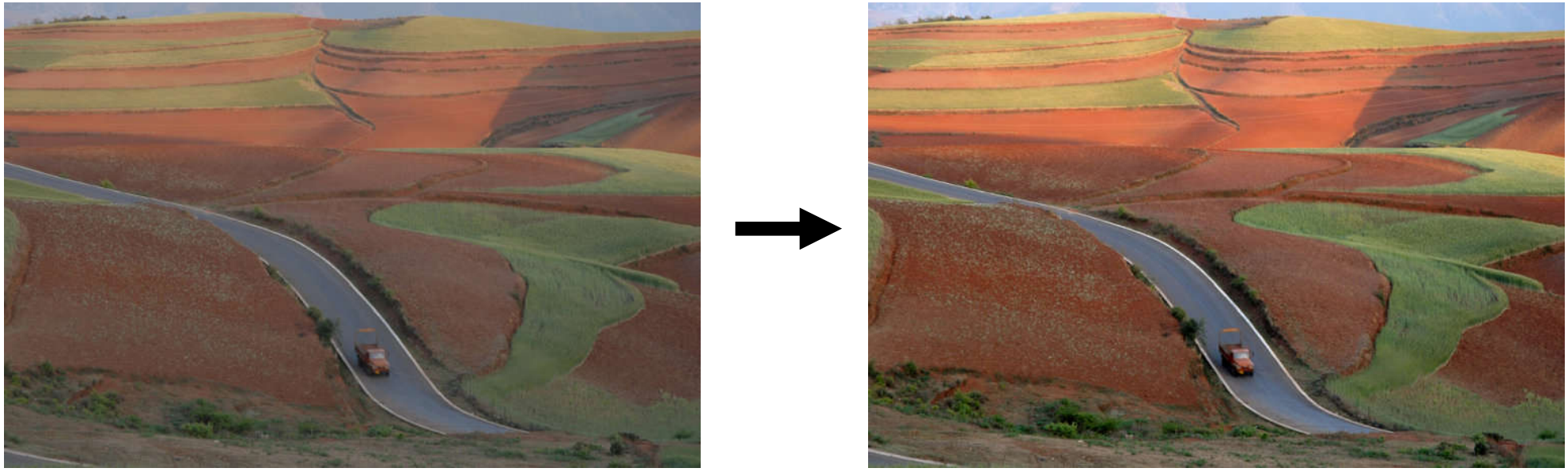
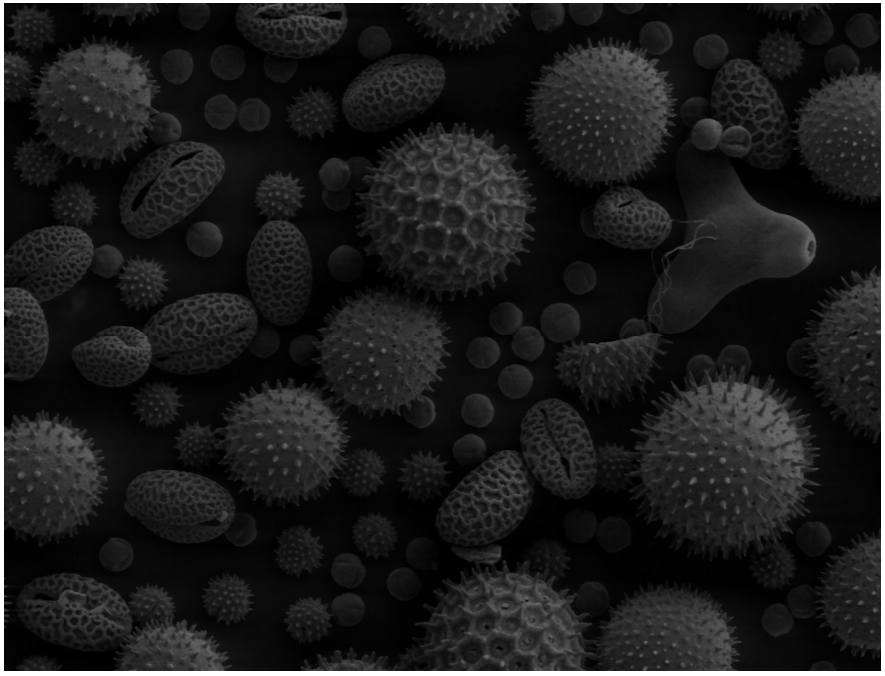


Image Adjustment



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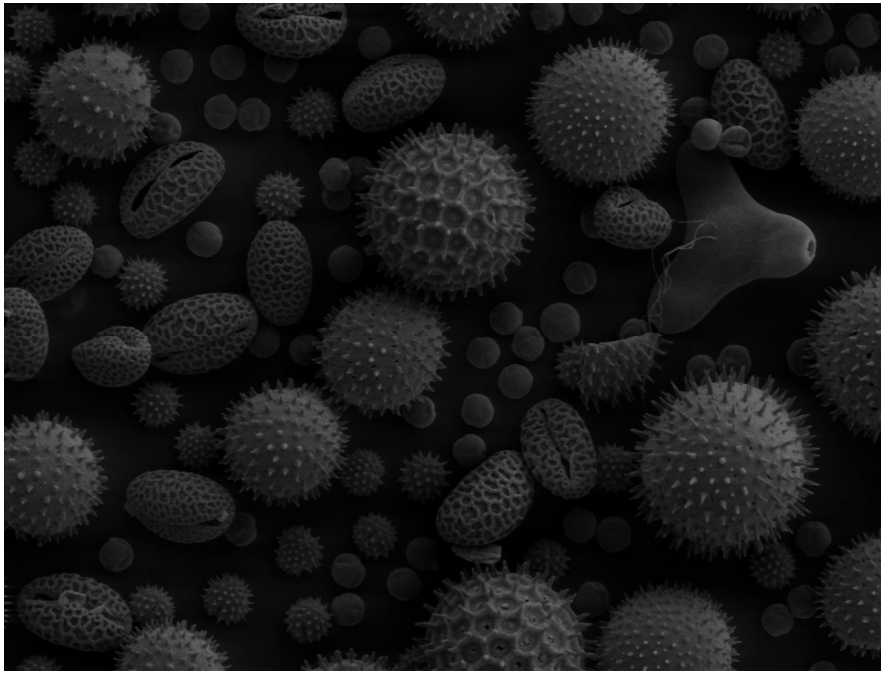
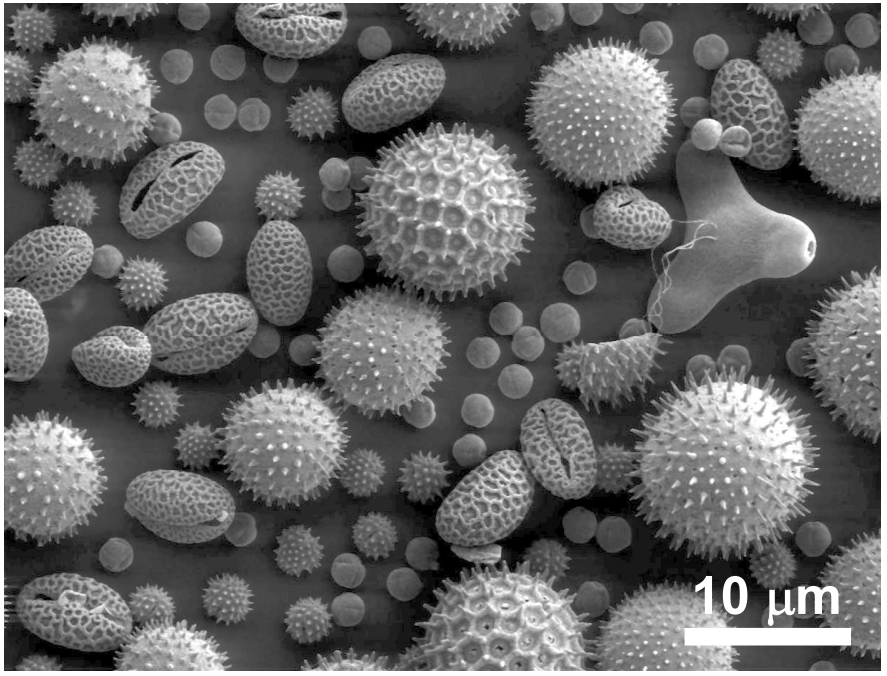
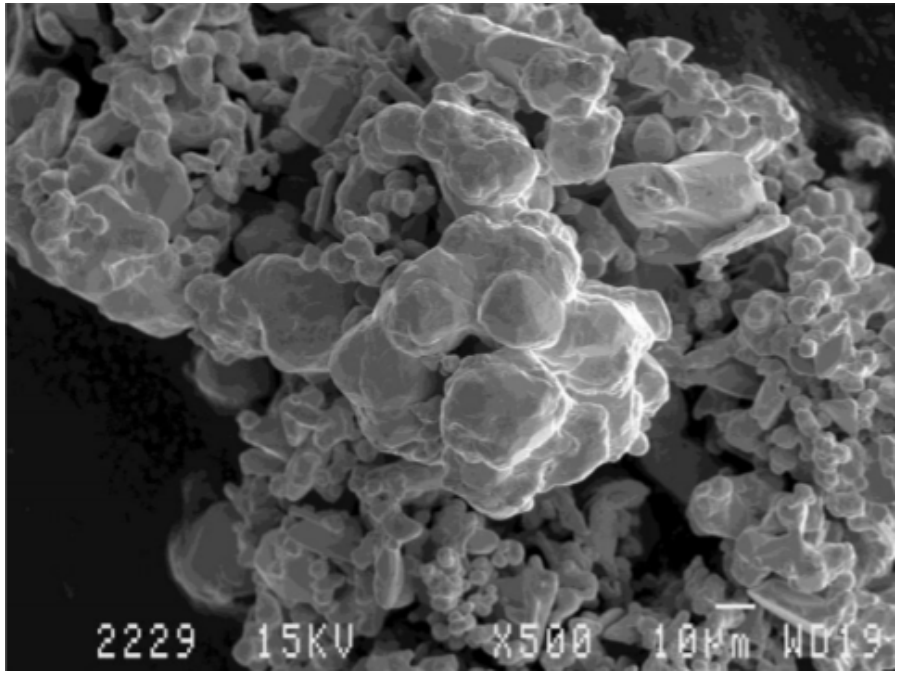


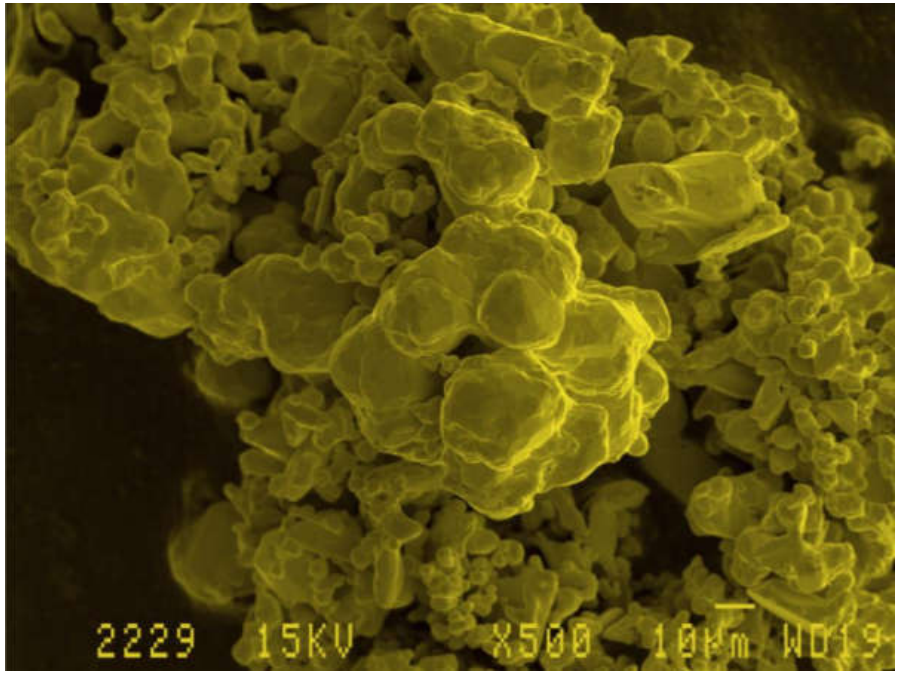


scale bars are needed for microscopic images

Image Adjustment

- Colorize greyscale image
  - 'False Color'





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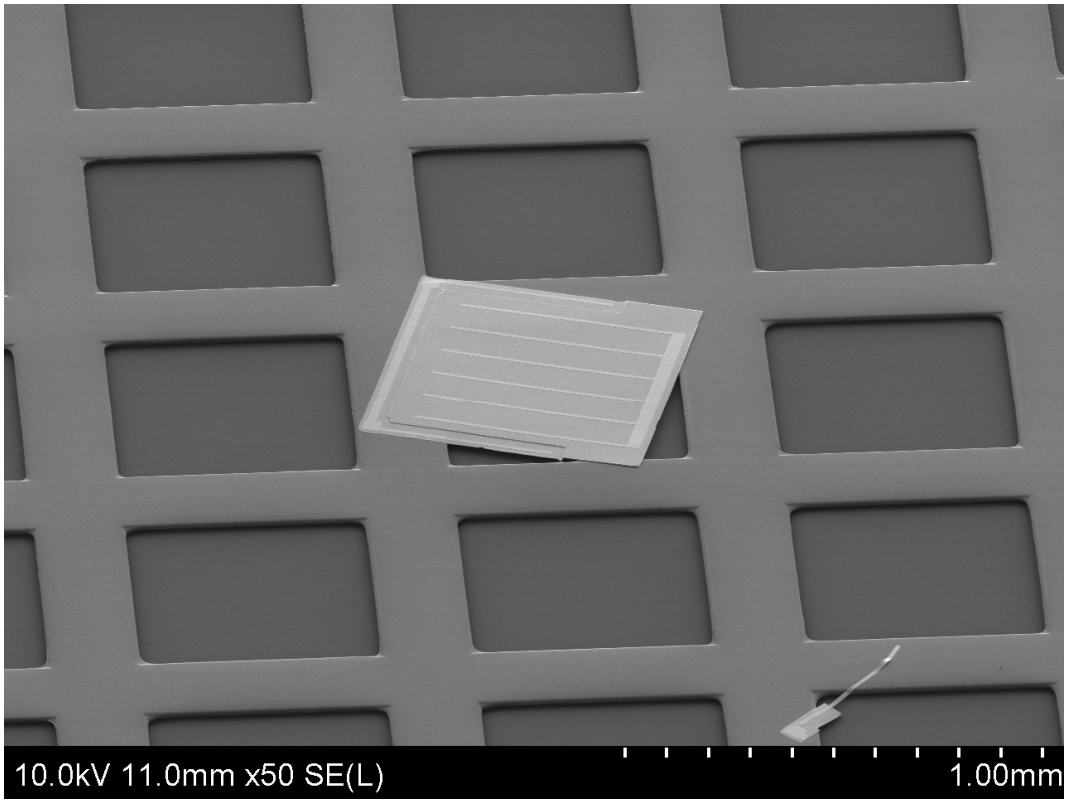
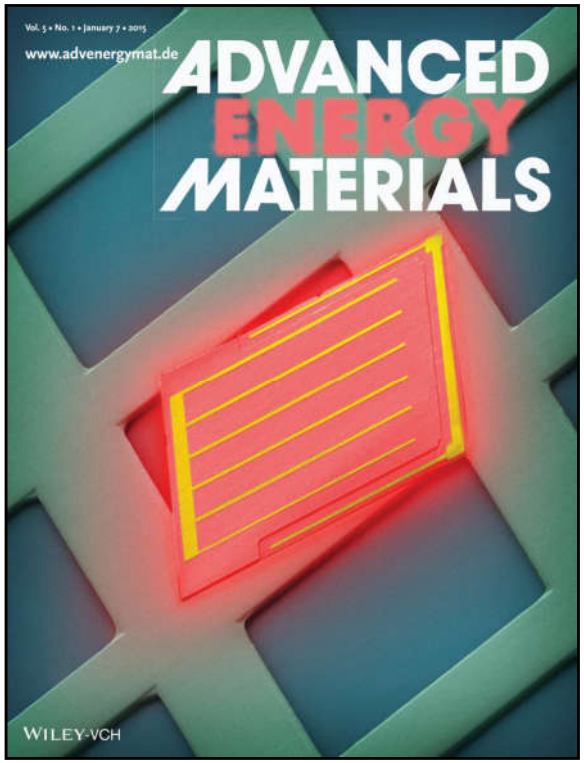
Solvay Conference, 1927

Cover Arts

- **You have more freedom to decorate the images**





X. Sheng, *et al.*, *Adv. Energy Mater.* **5,** 1400910 (2015)

Cover Arts

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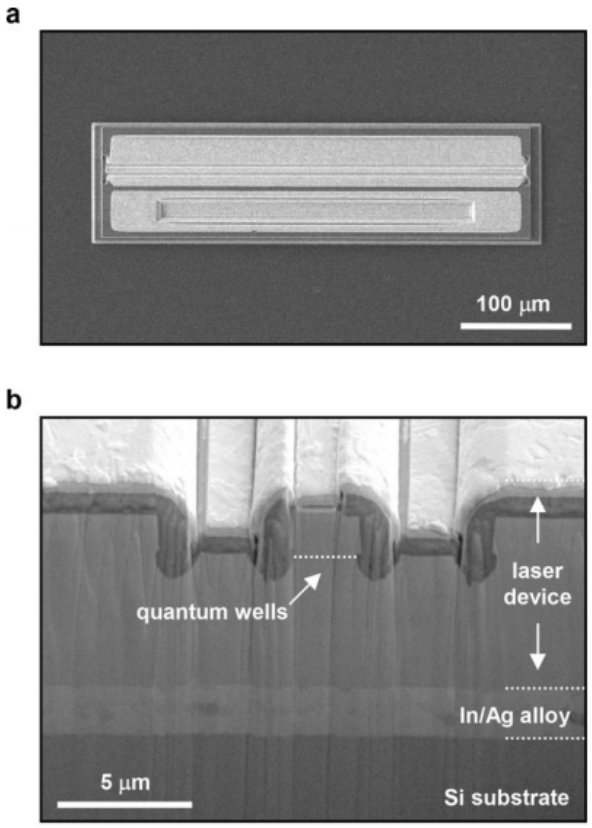

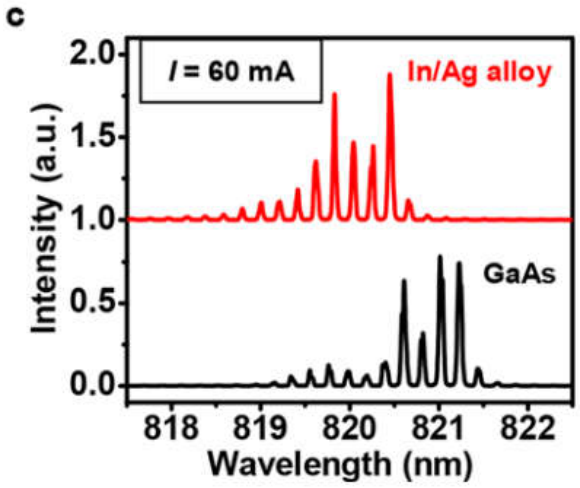

X. Sheng, *et al.*, *Laser & Photon. Rev.* **9,** L17 (2015)