Resources and Tools for Physics Research

PC5198: GRADUATE SEMINAR MODULE IN PHYSICS
4 FEBRUARY 2020 (SESSION 1)

LOH MEE LAN
SENIOR LIBRARIAN, NUS LIBRARIES
Before we start...

<table>
<thead>
<tr>
<th>Use Google Chrome</th>
<th>Slides are available after the tutorial</th>
<th>Log in the computer using NUSNET ID and password</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Google Chrome" /></td>
<td><img src="image" alt="Slides" /> <a href="http://libguides.nus.edu.sg/physics">http://libguides.nus.edu.sg/physics</a> (Lib Instruction &amp; Tips Tab)</td>
<td><img src="image" alt="Log In" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raise your hand if having any questions/issues</th>
<th>Please have a snack!</th>
<th>Last but not least, enjoy the session!</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Hand" /></td>
<td><img src="image" alt="Chocolates" /></td>
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Who are we? Science Resource Team

Biological Sciences
Chemistry
Food Science & Technology
Environmental Studies
Mathematics
Physics
Statistics & Applied Probability
Session Outline

• Overview of Library Services and Resources
  • Loans Entitlements and Services
• Introduction to Research Life Cycle for early career researchers
• Resources for Physics Research
• Ethics in Research
Library Services and Resources
Your Access to NUS Libraries

Your matric card = your library card

Go to: NUS Libraries Portal Page (http://www.lib.nus.edu.sg)
NUS Libraries Portal
(http://www.lib.nus.edu.sg)
Your Library Account

Login to your library account (MyLINC)

Please enter the following information. To protect your privacy, do remember to logout after viewing your library record.

Matric/Staff/Membership number:
- e.g. Staff: 123456
- Students: A0135790X, U08123456, HT0986504
- External members & Term card holders: LP01234HZ, T123456

Library PIN:

More Services & E-Forms For...
- More Services & E-Forms For...
- Undergraduates
- Honours Students
- Graduate Students
- Academic/Executive/Professional Staff
- Non-Academic Staff
- External Members

Renew items
Reserve items/Place a hold
Borrow items at self-check out stations
Request items from closed stacks
Services for Graduate Students

QUICK LINKS

- My Library Account
- Library PIN
- Facilities Booking
- Contact
- FAQs
- Subject Guides

Home Services For...

More Services For...
- Undergraduates
- Honours Students
- Graduate Students
- Academic/Executive Professional Staff
- Non-Academic Staff
- External Members

SERVICES FOR GRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Services</th>
<th>Links</th>
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<tbody>
<tr>
<td>Essential Guides</td>
<td>New to NUS</td>
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<tr>
<td></td>
<td>Research Help</td>
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<tr>
<td></td>
<td>Research Tools</td>
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<tr>
<td></td>
<td>Subject Guides</td>
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<tr>
<td>Contact Us</td>
<td>Ask a Librarian</td>
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<td></td>
<td>Schedule an Advisory Session with Your Resource Librarian</td>
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<td>Loan of Library Materials</td>
<td>Interlibrary Loan</td>
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<td>Intra-library Loan</td>
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<td>Loans Services</td>
<td>Pay Fines Online via NUSFastPay</td>
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<td>Print Form to Pay Fines</td>
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<td></td>
<td>Renew Loans</td>
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<td></td>
<td>Report a Lost book</td>
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<td>Reserve Items</td>
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<tr>
<td>Recommendation to Purchase New Materials</td>
<td>Recommend Books</td>
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<td>Recommend Journals</td>
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<td>Recommend Media Materials</td>
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<td>Purchase Articles/Book Chapters/Conference Papers Not Found in NUS Libraries</td>
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<tr>
<td>Document Delivery Services (DDS)</td>
<td>Purchase Articles/Book Chapters/Conference Papers Not Found in NUS Libraries</td>
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<tr>
<td>Other Services</td>
<td>Book ArtsBuzz &amp; Central Library Lobby</td>
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<td>Book Library Facilities</td>
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<td>Change Mail/Email Address</td>
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<td></td>
<td>Network Printing</td>
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Your Loan Entitlement and Services

**Loan entitlement:**
- Max 30 books and 2 RBR books

**Loan period:**
- Main shelves books: 28 days
- RBR: 2 hours/overnight

**3 online renewals** for library materials

**More services:**
- [Study carrels](#) (4 hours per loan)
- [Document Delivery Service](#) (DDS)
- Intra-library loan
- Inter-library loan
Study Carrels
Research Life Cycle

FOR EARLY CAREER RESEARCHERS
Research Journey for Young Researchers

- Cite using reference manager
- Literature Review
  - Search on Databases
- Measurement of research impact
  - Enhance your research visibility

Researcher Unbound Workshops
Typical Research Life Cycle for Graduate Students

- Grant and Proposal to fund project
- Identify and Define Research Topic
- Determine how to conduct research
- Collect research data
- Analyze & interpret research data
- Thesis
- Oral Defense

Grant Proposal Writing

Research Proposal Writing

Getting Your Research Published

Writing the Thesis

Preparing for Oral Defense (Presentation Skills)

Literature Review

Databases Search

Reference Management Software

Progress Report Writing

Qualifying Examination

Source: Dr. Magdeline Ng Tao Tao, Science Library, NUS
Literature Review

Video by: NUS Libraries
Evaluation of Information Sources - 6 Criteria

1. Authority
2. Accuracy
3. Objectivity
4. Timeliness
5. Relevance
6. Review Process

Evaluation Criteria: Learn How to Evaluate Information Effectively
Video By Engineering & Computer Science RT, NUS Libraries
Learning Points of Scoping by Questioning

<table>
<thead>
<tr>
<th>Ask as MANY questions you can</th>
<th>Ask questions with a PURPOSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draw INSIGHTS from questions and answers</td>
<td>Ask MORE questions when answers are FOUND</td>
</tr>
</tbody>
</table>

INCREASE your understanding & knowledge of the topic
Google Scholar

Search tips and finding full-text

Scopus

Journal articles, conference papers database, trends in research based on publications data

patsnap

A patents database, patents activity

ScholarBank@NUS

NUS’ institutional repository of NUS PhD thesis and dissertations and publications

Mendeley

A reference management tool to download and cite publications
Resources for Physics Research

- FINDMORE
- LINC (LIBRARY INTEGRATED CATALOGUE)
- DATABASES
- LIBRARY TOOLS
FindMore (Library Portal)
FindMore

http://libguides.nus.edu.sg/findmore
FindMore (New)

For more information, see FAQ
LINC (Library Catalogue)
LINC Record (Book)

Title: Low-dimensional semiconductor structures: fundamentals and device applications / edited by Keith Barnham and Dimitri D. Vvedensky.

Edition: [Digitally printed version; pbk. re-issue]

Where to find it:
- Science Library Books
- Science Library Closed Stacks
- Other NUS Libraries Books

Call number (“ID number”) for Physics titles usually start with QC

Status of book:
- Available
- Due XX-XX-XX
LINC Record (E-Book & E-journal)

Imprint: Singapore : World Scientific, c1986-

Online access via:
- NUS Libraries
- WorldSciNet
- 01 Jan. 2001
- About this E-Resource

<table>
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<tr>
<th>LOCATION</th>
<th>CALL #</th>
<th>STACK#</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Library Closed Stacks (Approach Loans Desk)</td>
<td>QC173 IJMA v1 n1-2 1986 (pg 1-498)</td>
<td>S51458</td>
<td>REQUEST ITEM</td>
</tr>
<tr>
<td>Science Library Closed Stacks (Approach Loans Desk)</td>
<td>QC173 IJMA v1 n3-4 1986 (pg 500-1007)</td>
<td>S51459</td>
<td>REQUEST ITEM</td>
</tr>
</tbody>
</table>

- Click here to get access to the journal
- Login with your NUSNET ID and password
Searching Theses

**NUS Theses and Dissertations**

- Before Sep 2003 (Print):
  Call No. Starting with QC3 YYYY

- After Sep 2003 (E-Theses):
  [ScholarBank@NUS](https://scholarbank.nus.edu.sg) (only Master (by research) and PhD theses)

**Non-NUS Theses and Dissertations**

- Theses Databases:
  [ProQuest dissertations & theses](https://proquest.dissertations.com)
  [Springer Theses](https://link.springer.com/content/dam/sgc/journals/springer-theses/)

- Recommend to [purchase thesis](https://library.nus.edu.sg/)

[Library FAQs on finding theses](https://library.nus.edu.sg/FAQs/Thesis.html)
Databases

• CRAFTING SEARCH STATEMENTS

▪ SEARCH TIPS
What databases do you normally use for your physics research? Enter name of database, e.g. Google Scholar
Search Process

1. What are you looking for?
2. Identify keywords/concepts
3. Identify search engine/database
4. Search in Database
5. Look at Results
6. Satisfied?

- Uses of Graphene
- Graphene AND Carbon Nanomaterials
- Databases e.g. Inspec, Web of Science, ArXiv, etc.
- Apply search techniques
- Relevant results?

- Change keywords?
- Change database?
- Change search techniques?

- Yes
- No
A Few Tips on Crafting Your Statement

Sample research topic:

Study of induced radioactivity of materials in and around proton radiotherapy beams

1. Identify the keywords in topic
   - Induced radioactivity
   - Proton radiotherapy beams

2. Find the synonyms of keywords
   - Proton beams / proton radiation

3. Look for different variations of keywords
   - radioactivity, radioactive ➔ radioactive*
   - Beams, beam ➔ beam*

4. Use phrase searching “ ”
   - “Proton radiotherapy beam*”

5. Use Boolean operators
   - “Proton radiotherapy beam*”
   - OR
   - “proton beam*”
   - OR
   - “proton radiation”
A Few Tips on Crafting Your Statement

We need to have a **good search statement** in order to retrieve information tailored to our needs, topics or requirements.

**Sample research topic:**

*Study of induced radioactivity of materials in and around proton radiotherapy beams*

**Suggested search statement:**

induced radioactiv*

AND

("proton radiotherapy beam*" OR "proton beam*" OR "proton radiation")
Core Research Databases in Physics

NUS-subscribed Databases:

a) **INSPEC** – Covers physics, electronics, computing and engineering from 1896.

b) **Institute of Physics (IOP) Science** - Over 60 IOP journals with archive dating back more than 130 years

c) **Physical Review Online Archive (PROLA)** - From the American Physical Society, this database’s coverage is from 1893 to present

d) **Web of Science** – Multidisciplinary, 1900 onwards.

e) **Scopus** – Multidisciplinary, 1996 onwards.

f) Scitation - American Institute of Physics (AIP) publications

Open Access: [arXiv.org](https://arxiv.org)  
Accessing Subscribed Databases (On and Off campus)

Best to start from NUS Libraries Portal

Q. How do I login to access E-Resources such as Databases, E-Books, E-Journals etc.
Databases (NUS Libraries Portal)
Web of Science (WOS)

WOS’s Core Collection:

> 21,177 journals + books and conference proceedings

Period Covered

◦ Science, Social Sciences: 1900-present
◦ Arts & Humanities: 1975-present, etc.

Includes citation analysis

◦ - citation tracking
◦ - Hot and Highly Cited Articles

Updated daily (Mon-Fri)

Source: Web of Science, Summary of Coverage
Database Demonstration: Web of Science (WOS)

Sample research topic:
Study of induced radioactivity of materials in and around proton radiotherapy beams

Suggested search statement:
induced radioactiv*
AND
("proton radiotherapy beam*" OR "proton beam*" OR "proton radiation")

* For more search tips in WOS, please visit here.
Scopus
Scopus is the largest abstract and citation database of peer-reviewed literature: scientific journals, books and conference proceedings.

Data from more than 22,800 titles #

Over 69 million records
- 62.4+ million records post 1969 with references
- 6.6+ million records pre-1970

Patents
- More than 39 million patent records from five patent offices

Updated daily

(# info as at August 2017)
Inspec

Over 16 million abstracts related to physics, electronics, computing and engineering.

• One of the Engineering Village databases
• Contains over 16 million records
• Updated weekly
• 1896 to present
• Thesaurus, indexing and classification codes to aid in effective searching

Source: Inspec, Institution of Engineering and Technology
Inspec

Graphene

AND

superconductivity
Graphene: metal particle nanocomposites

Chao Xu 1, Xin Wang 1, Junwu Zhu 1

Sources: Journal of Physical Chemistry C, v 112, n 50, 19841-5, 18 Dec. 2008; ISSN: 1932-7447; DOI: 10.1021/jp807989b; Publisher: American Chemical Society, USA

Author affiliation: 1 Key Lab. for Soft Chem. & Functional Mater., Nanjing Univ. of Sci. & Technol., Nanjing, China

Abstract: Graphene sheets, which possess unique nanostructure and a variety of fascinating properties, can be considered as promising nanoscale building blocks of new composites, for example, a support material for the dispersion of nanoparticles. Here, we present a general approach for the preparation of graphene-metal particle nanocomposites in a water-ethylene glycol system using graphene oxide as a precursor and metal nanoparticles (Au, Pt and Pd) as building blocks. These metal nanoparticles are adsorbed on graphene oxide sheets and play a pivotal role in catalytic reduction of graphene oxide with ethylene glycol, leading to the formation of graphene-metal particle nanocomposites. The typical methanol oxidation of graphene-Pt composites in cyclic voltamograms analyses indicated its potential application in direct methanol fuel cells, bringing graphene-particle nanocomposites close to real technological applications. (24 refs)

Inspec controlled terms: catalysts - fuel cells - gold - graphene - nanocomposites - nanofabrication - nanoparticles - organic compounds - oxidation - palladium - platinum - reduction (chemical) - voltammetry (chemical analysis) - water

Uncontrolled terms: graphene-metal particle nanocomposites - graphene sheets - nanoscale building blocks - water-ethylene glycol system - graphene oxide sheets - catalytic reduction - oxidation - cyclic voltammetry analyses - direct methanol fuel cells - C-Au - C-Pt - C-Pd

Classification code: A9126V Preparation of graphene and graphene-related materials, intercalation compounds, and diamond - A8116 Methods of nanofabrication and processing - A8230V Homogeneous catalysis - A8280F Electrochemical analytical methods - A8630G Fuel cells - B8410G Fuel cells

IPC Codes: B01J - B82B1/00 - B82B3/00 - G01N27/26 - H01M9/00

Treatment: Experimental (EXP)

Database: Inspec
arXiv® is an e-print service in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance, statistics, electrical engineering and systems science, and economics.

Set up email alert service - https://arxiv.org/help/subscribe

FAQ: What is pre-print, submitted version, post-print, accepted version, and publisher's PDF?
American Institute of Physics (AIP) Complete E-journal Collection (with Extended Backfiles), including AIP Conference Proceedings and selected e-journal titles from its member societies, and other affiliated organizations.

https://www-scitation-org.libproxy1.nus.edu.sg/
Physics Library Guide

http://libguides.nus.edu.sg/physics
Library Tools

- PROXY BOOKMARKLET
- LIBRARY LINKS
Enables full-text access to subscribed journal articles

Installation Guide
Library Links in Google Scholar

Change “Library Links” in Settings to “National University of Singapore” – ensures that “Find It! @NUS Libraries” appears.
Subscribe to alerts and Newsletters

You can subscribe to the following alerts to keep updated on new Physics research development:

- Databases’ alerting service, e.g. saved search alert
- Publishers and journals’ alerting services and newsletters
- LINC alerting service, e.g. saved search alert
- Citation alerts
- RSS feeds from related Physics websites and news organisations
Ethics in Research

- HOW TO AVOID PLAGIARISM
- INTRODUCTION TO REFERENCE MANAGEMENT SOFTWARE
Singapore researchers' scientific papers retracted, PhD revoked over data falsification

“... six papers being retracted, academic appointments terminated and one PhD degree revoked.”

- July 2016


NUS E-Resources on Plagiarism

http://www.nus.edu.sg/celc/programmes/plagiarism.html
NUS Code of Student Conduct

(A) Academic, Professional and Personal Integrity

3. The University is committed to nurturing an environment conducive for the exchange of ideas, advancement of knowledge and intellectual development. Academic honesty and integrity are essential conditions for the pursuit and acquisition of knowledge, and the University expects each student to maintain and uphold the highest standards of integrity and academic honesty at all times.

4. The University takes a strict view of cheating in any form, deceptive fabrication, plagiarism and violation of intellectual property and copyright laws. Any student who is found to have engaged in such misconduct will be subject to disciplinary action by the University.

5. It is important to note that all students share the responsibility of protecting the academic standards and reputation of the University. This responsibility can extend beyond each student’s own conduct, and can include reporting incidents of suspected academic dishonesty through the appropriate
Plagiarism

The practice of taking someone else’s work and passing them off as one’s own, without citing the sources

Work

The words and ideas of others, as well as art, graphics, computer programs etc

Sources

Published works – books, newspapers, articles etc.

“Plagiarism: What It is and How to Recognize and Avoid It"
How to avoid Plagiarism?

Cite your sources!

Use quotation marks (" ") for any sources that you cite.

1. Citation: In-text, footnote

Emotional intelligence, as popularised by Goleman, is believed to be a more important factor of success in life than our IQ. More significantly, “our level of emotional intelligence is not fixed genetically, nor does it develop only in early childhood. Unlike IQ, which changes little after our teen years, emotional intelligence seems to be largely learned, and it continues to develop as we go through life and learn from our experiences—our competence in it can keep growing” (Goleman, 1998:8).
How to avoid Plagiarism?

2. Reference (Bibliography)

...  

...
Reference Management Software

Mendeley
EndNote
Zotero
Before next class:

http://libguides.nus.edu.sg/mendeley
Before next class: Join as MIE member
http://libguides.nus.edu.sg/mendeley

Scroll down to middle of page
Game

https://kahoot.it/
Thank you for attending today!

Please fill in the feedback form:


Programme Name: PC5198 (Session 1)

Contact Us at askalib@nus.edu.sg | Tel: 6516 2454