

'396' Undergraduate Research Project Application Form

Version: 200603

Office for Undergraduate Research in Science
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Email: victor.chisholm@mcgill.ca Web: www.mcgill.ca/science/ours/

INSTRUCTIONS FOR STUDENTS

- **All fields are required, unless indicated otherwise.**
- Download and print this form. Complete Section C and sign.
- See "How students can apply" instructions in Section B.
- Your supervisor or department will tell you if you are selected for this project. If so, you will receive permission to register for a '396' course on MINERVA.

SECTION A: SUPERVISOR INFORMATION

Name: Peter Grütter and Matthieu Nannini **Email:** matthieu.nannini@mcgill.ca
Phone: 514-398-6536 **Website:** <http://miam.physics.mcgill.ca/miam/microfab>
Supervisor's Department or Unit: Physics – Nanotools Microfab **Course Number:** PHYS396

SECTION B: PROJECT INFORMATION

Term: Winter 2007 **Project start & end dates:** Wed, Jan 3, 2007 to Wed, April 11, 2007, ~one day per week

Project title: Titanium Nitride: deposition process development and characterization

Project description: Titanium Nitride thin film coatings are obtained using a reactive sputtering process. In a vacuum chamber, plasma is created from a gas blend of Ar and N₂ and a pure titanium target is exposed to this plasma. As a result, the TiN compounds is formed and get deposited onto Si or glass substrate. Different parameters can influence the quality of the coating: pressure, gas ratio, power, temperature, etc.
In this research course, we propose to determine the effect of each parameter on physical and optical properties of the film.

Prerequisites: 1 term completed at McGill + CGPA ≥ 3.0; or permission of instructor.

Grading scheme: Literature Survey and plan of action 10%, Final report 70%, Final presentation 20%

Other: E.g., location if off-campus; read book/paper/website before applying; best way to reach me is...; etc.

Status: Mark with an x. **This project is...**
[] Open to applicants
[] Already taken; no more positions available this term
[x] Taken, but contact me for other possible projects this term

Ethics, safety, and training: Which of the following, if any, is involved? Mark with an x.
[] Animal subjects
[] Human subjects
[] Biohazardous substances
[] Radioactive materials
[x] Handling chemicals
[] Using lasers

For undergraduate students, ethics and safety compliance is the supervisor's responsibility.

How students can apply: Send an email

SECTION C: STUDENT INFORMATION. (1) PRINT LEGIBLY AND SIGN. (2) SEE "HOW STUDENTS CAN APPLY" IN SECTION B.

Name: _____ **McGill ID:** _____
Email: _____@mail.mcgill.ca **Phone:** _____
Program: _____ (e.g., B.Sc. Maj. Chem. Minor Biology) **Level:** _____
I have not applied for another 396 course in this term. **(circle one)** U0 / U1 / U2 / U3
Student signature: _____ **Date:** _____

SECTION D: APPROVALS. (1) PRINT NAMES & SIGN. (2) NOTIFY OFFICE FOR UNDERGRADUATE RESEARCH IN SCIENCE. (3) GIVE STUDENT CODE TO REGISTER FOR COURSE ON MINERVA.

Supervisor: _____ **Date:** _____
Unit Chair, Director, or designate - I certify that this project conforms to departmental requirements for 396 courses. _____ **Date:** _____