

# GREGORY M. TROUP

(610) 966-1751

302 Brookfield Circle // Macungie, PA 18062

gtroup@princeton.edu

---

## QUALIFICATIONS SUMMARY

**Chemical Engineer** with solid research experience, including investigating the biological processes of heart disease and gallstone disease. Analytical and inquisitive with proven communication and leadership abilities; quick-learner skilled in research and development. Recent Ph.D. in Chemical Engineering from Drexel University. Highly motivated, dedicated, and focused.

## SKILLS SUMMARY

**Laboratory Techniques:** Fluorescence Spectroscopy • Dynamic and Static Light Scattering • UV-vis spectroscopy • SEM • AFM • Microscopy

**Computer:** MS Office • Computational Fluid Dynamics (CFX) • Process Simulation Software (SimSci) • MATLAB • Fortran • C++

**Biology Courses:** General Biology / Lab • Cell Biology • Biochemistry I & II • Biomembranes Transport Phenomena in Biological Systems • Intermolecular Forces in Soft Materials

## EDUCATION / HONORS / LEADERSHIP

**DREXEL UNIVERSITY**, Philadelphia, Pennsylvania

**Ph.D. in Chemical Engineering**, June 2004 // GPA 3.90 // Advisor: Steven P. Wrenn

*Thesis:*

- A Fluorescence Investigation of Laterally Phase-Separated Cholesterol Rich Domains in Model Lipid Membranes

*Honors / Awards:*

- Excellence in Graduate Research Award, 2003
- Koerner Fellowship for Academic Merit, 2002

*Leadership:*

- *Founder and President*, Drexel University Chemical Engineering Graduate Student Association, 2002
- *Organizer*, four-lecture seminar series on graduate student development, 2002
- *Chair Member*, two faculty tenure committees for the Chemical Engineering Department, 2002
- *Session Moderator*, Mid Atlantic Bioengineering Consortium Meeting, 2001

**NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY**, Socorro, New Mexico

**Bachelor of Science in Chemical Engineering**, 1998 // with honors // GPA 3.13

*Senior Design Project:* Production of Ethylene from Ethane in the San Juan Valley NM

- Passed the Fundamentals of Engineering Examination

## RESEARCH / PROFESSIONAL EXPERIENCE

**Interfacial Phenomena Research Group at Princeton University**

2004 – Present

Princeton, New Jersey

**Post-Doctoral Research Associate**

- Characterized effects of commercial spermicidal agents on physical properties of sperm cell membranes.
- Conducted time-resolved anisotropy measurements on model and extracted sperm cell membranes.
- Extracted the plasma membranes from rabbit sperm cells.

**Biological Colloids Laboratory at Drexel University**, Philadelphia, Pennsylvania

1999 – 2004

**Research Assistantship**

- Setup and organized a new laboratory space.
- Investigated the mechanism by which cholesterol precipitates from biological colloids in the context of heart disease and gallstone disease.
- Developed fluorescent method for estimating the size of laterally phase-separated cholesterol domains in model membranes.

**RESEARCH / PROFESSIONAL EXPERIENCE**  
CONTINUED**Sandia National Labs**, Albuquerque, NM

1998 – 1999

**Research Internship**

- Created Fortran program for the modeling and design of a micro scale gas chromatography column for the "Chem Lab on a Chip" project.
- Developed kinetic model for polymer deposition in micro-fabrication processes.
- Conducted finite elements and Monte Carlo simulations to model the etching of silicon wafers in inductively coupled plasma reactors.

**Los Alamos National Lab**, Los Alamos, NM

1998

**Research Internship**

- Modeled 3-D non-isothermal fluid flow patterns for nuclear materials storage facility design.
- Designed a beam to support a LASER aperture of a particle accelerator using finite elements analysis.
- Modeled the trajectories of airborne radioactive particles for optimization of air monitor placement in nuclear materials fabrication rooms.

**TEACHING EXPERIENCE****Teaching Assistant** – Chemical Engineering Program

- Assisted in the following classes: Thermodynamics, Mass Transfer, Fluid Mechanics, Material Balances, Senior Design, and Mass Transfer Lab.
- Led problem solving sessions and graded homework and exams.
- Supervised six undergraduates and four high school students in conducting research.

**PUBLICATIONS**

G. M. Troup, M. Apel-Paz, G. F. Doncel, T. K. Vanderlick, A time-resolved fluorescence lipid order parameter investigation of spermicidal surfactant interactions with reconstituted rabbit sperm plasma membranes, (In preparation).

G. M. Troup, S. P. Wrenn, K. Boesze-Battaglia, Y. Huang, Y. Xie, T. Kirk, F. Hanley, T. N. Tulenko, Membrane cholesterol and the formation of cholesterol domains in the pathogenesis of cardiovascular disease, (Submitted to the Proceedings of the American Chemical Society, 07/12/04).

G. M. Troup and S. P. Wrenn, 2004, Temperature and cholesterol composition-dependent behavior of 1-myristoyl-2-[12-[(5-dimethylamino-1-naphthalenesulfonyl)amino]dodecanoyl]-sn-Glycero-3-phosphocholine in 1,2-dimyristoyl-sn-glycero-3-phosphocholine membranes, *Chemistry and Physics of Lipids*. 131:2, 167-182.

G. M. Troup, S. P. Lee, T. N. Tulenko, S. P. Wrenn, 2004, Estimating the size of laterally phase separated cholesterol domains in model membranes with fluorescence energy transfer: a simulation study, *Colloids and Surfaces B: Biointerfaces*. 33, 57-65.

G. M. Troup, S. P. Lee, T. N. Tulenko, S. P. Wrenn, 2003, Detection and characterization of laterally phase separated cholesterol rich domains in model lipid membranes, *Colloids and Surfaces B: Biointerfaces*. 29, 217-231.

**PRESENTATIONS**

- AIChE National meeting 2003 San Francisco CA. "Estimating the size of laterally phase separated cholesterol domains in model membranes with fluorescence energy transfer: a simulation study", G. M. Troup, S. P. Lee, T. N. Tulenko, S.P. Wrenn.
- AIChE National meeting 2002 Indianapolis IN. "Detection and Characterization of Laterally Phase-Separated Cholesterol-Rich Domains in Model Lipid Membranes", G. M. Troup, S. P. Lee, T. N. Tulenko, S.P. Wrenn.
- MABEC 2001 Philadelphia PA. "Evidence of Laterally Phase-Separated Cholesterol-Rich Domains in Model Lipid Membranes". G. M. Troup, S. P. Lee, T. N. Tulenko, S. P. Wrenn.