

Research Experience for Undergraduates

Career Day

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Outline

- Scholastic background
- Graduate school
- Graduate research
- Job search
- Dissertation work
- Los Alamos National Laboratory
- Teaching Career plus Family

Scholastic background

- Chemistry, B. S.
 - University of Texas at San Antonio
 - Organic chemistry research
 - Physical chemistry
 - senior year



Graduate work at Texas A&M University Chemistry Department

- Coursework
 - 2 years
- Teaching
 - 1.5 years
- Research
 - varies

Texas
A&M
UNIVERSITY



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INSTITUTE**

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First two years of graduate school at Texas A&M University

- Coursework
 - Thermodynamics
 - Statistical mechanics
 - Quantum mechanics
 - Nuclear physics and chemistry
 - Computation physics
- Monthly exams (pass 5 out of 15)

First two years of graduate school at Texas A&M University

- Teaching
 - Chemistry 101 or 102 labs
 - Physical chemistry labs
 - Nuclear chemistry course and lab

Research at Cyclotron Institute

- Participate in several collaboration exps
- Design, build and test detectors
- Detector electronics systems
- Data acquisition systems
- Data analysis codes



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Participate in several collaboration exps

- 1997 FAUST exp
- 1998 E900A at Brookhaven National Laboratory
- 2000 NIMROD exp
- 2001 Laval exp
- 2001 FAUST exp
- 2003 Lassa/FIRST exp
- Various RNB/Big Sol exps

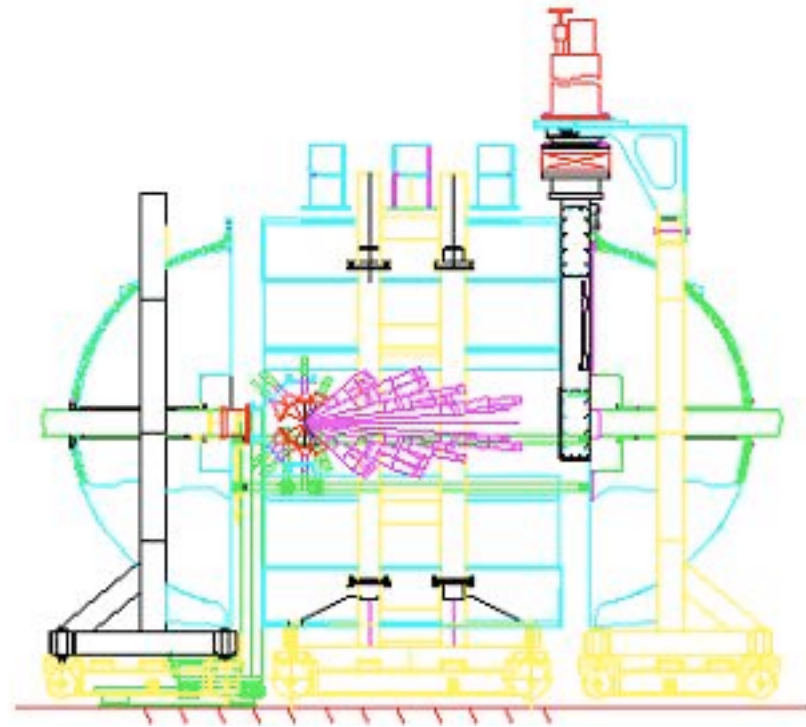


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Design, build test detectors

- NIMROD
 - Neutron
 - Ion
 - Multifragmentation
 - Reaction
 - Oriented
 - Dynamics
- Detectors
 - Organic scintillator
 - Ionization chambers
 - Silicons
 - CsIs

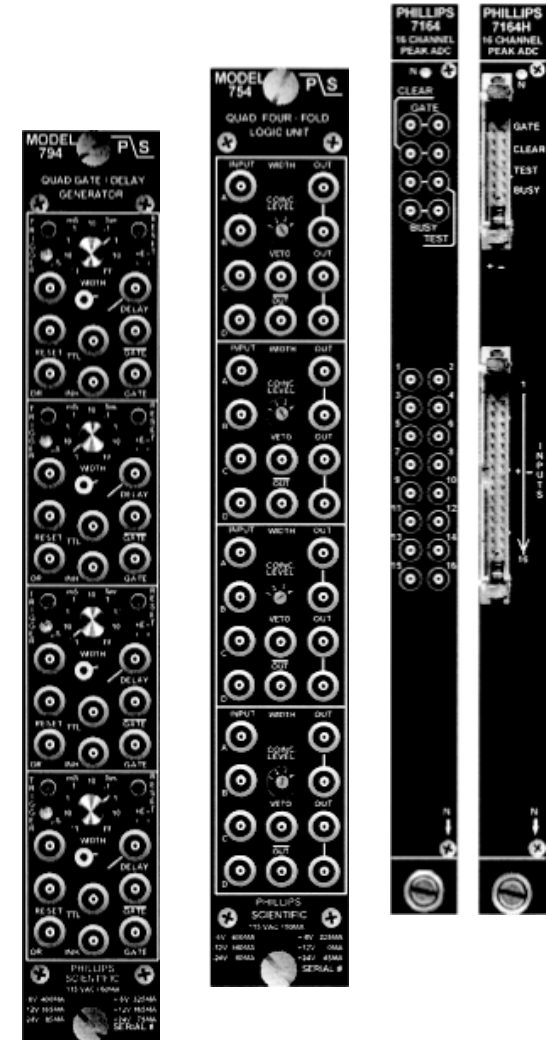


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Detector electronics systems

- Preamplifiers
- Amplifiers
- Analog to Digital Converters (ADCs)
- Time to Digital Converters (TDCs)
- Logic units
- And more...



Data acquisition systems

- VAX (DAQ)
- Linux (ROOT)
- Takes frontend electronics' information and produces online spectra
- Records raw exp data for later analysis



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Data analysis codes

- ROOT and CycAps
- C++
- Data management (81 Gigs)
- Calibration
- Extract meaningful results for thesis



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Job search



■ Conferences and meetings

- Gordon Research
- APS
- ACS



Gordon Research Conferences

■ Job fairs

- Great exposure!
- APS DNP (Denver, 2004)
 - LANL
 - LBL
 - Northrup Grumman
 - Dept Homeland Security

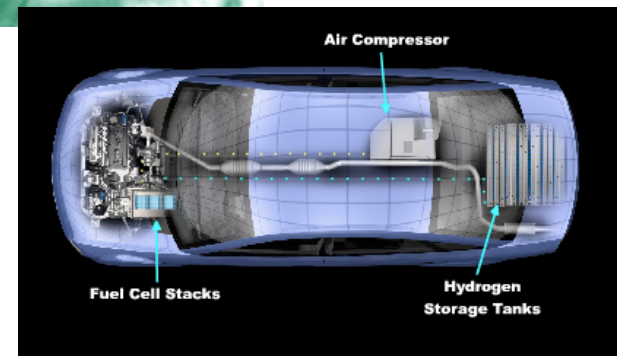
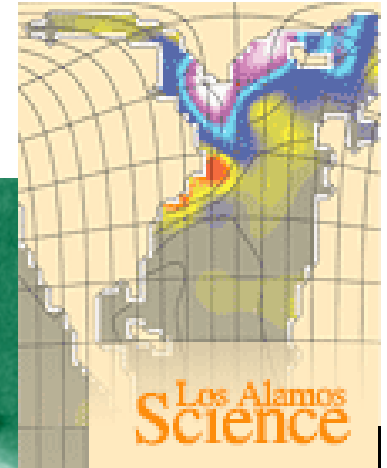
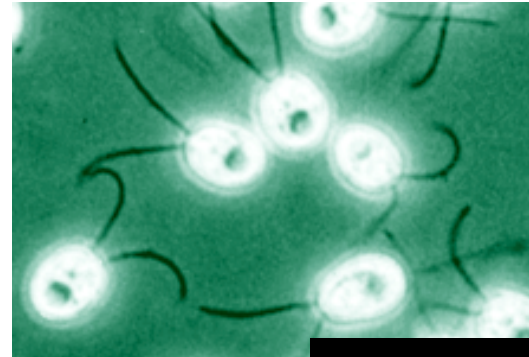


First Career Choice: LANL

- NM is beautiful.
- LANL employees are easy to work with.
- NM is not too far from family in TX.
- Pay is great.
- Research is interesting.
- Job uses skills learned in grad school.

Los Alamos National Laboratory

- National governmental research institution
- Stewardship of nuclear weapons stockpile
- Basic research
 - Geothermal modeling
 - Genome studies
 - Alternative fuel sources
 - Supercomputing facility
 - Nuclear physics
 - ..and more

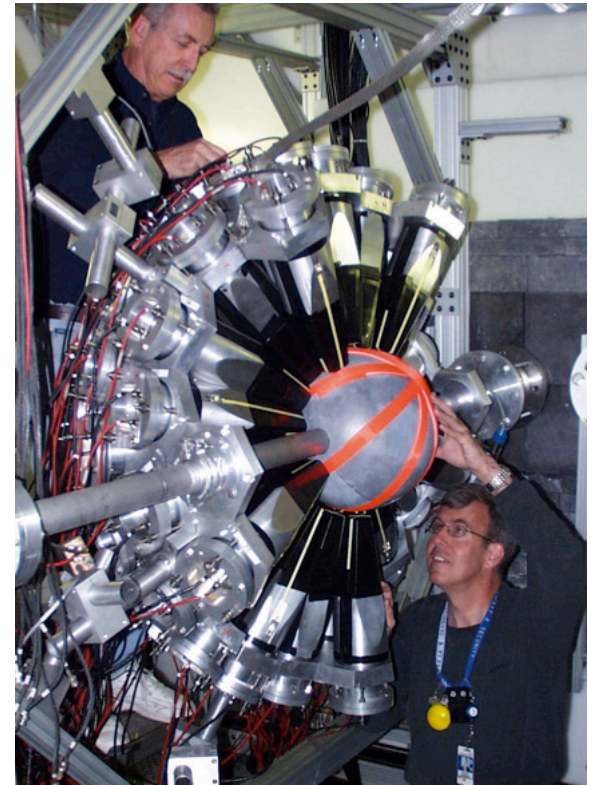


Los Alamos National Laboratory Research

- Measured (n,γ) reactions
- Stellar nucleosynthesis & S-process
- Stockpile Stewardship

DANCE

- Detector for Advanced Neutron Capture Exps
- Measure (n,γ) cross sections
- 160 BaF crystals, 4π
- N_E from a few eV to 100keV



Left LANL for Second Career Choice

- government agency bureaucracy a bit overwhelming
- producing data which is used for NWSS proved to be ethically problematic



Second Career Choice: Teaching

- enjoyed the most in past
- no ethical quandaries
- great community even closer to family
- working environment less stressful
- easier to start family with more flexible schedule



Teaching at Blinn

- prepare and give lectures
- prepare exams and quizzes
- laboratory classes
- grading
- office hours
- community service



Conclusion

- Graduate school = prep for future
 - Teaching experience
 - Technical skills
 - Collaborative skills
 - Career placement
- Many options are open at any time