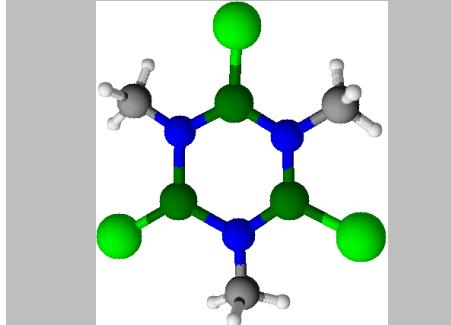
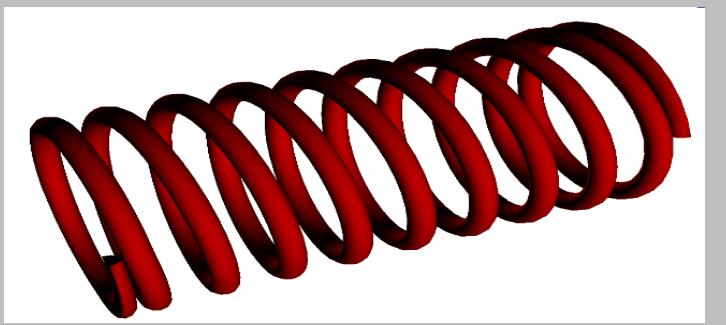


Exceptional service in the national interest



Pursuing a Chemistry Career

Ted Borek, Staff Member
September 28th, 2011



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Question of the Day

How do I build a successful career in science or engineering?

I like creating, building, and solving problems.

Can you show me the secret handshake for success?



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Define the Parameters of Success

1. Make a bunch of money.
2. Work on interesting projects that matter to me.
3. Be surrounded by smart, interesting people that have different backgrounds.
4. Win international recognition and renown.

Well, me too!



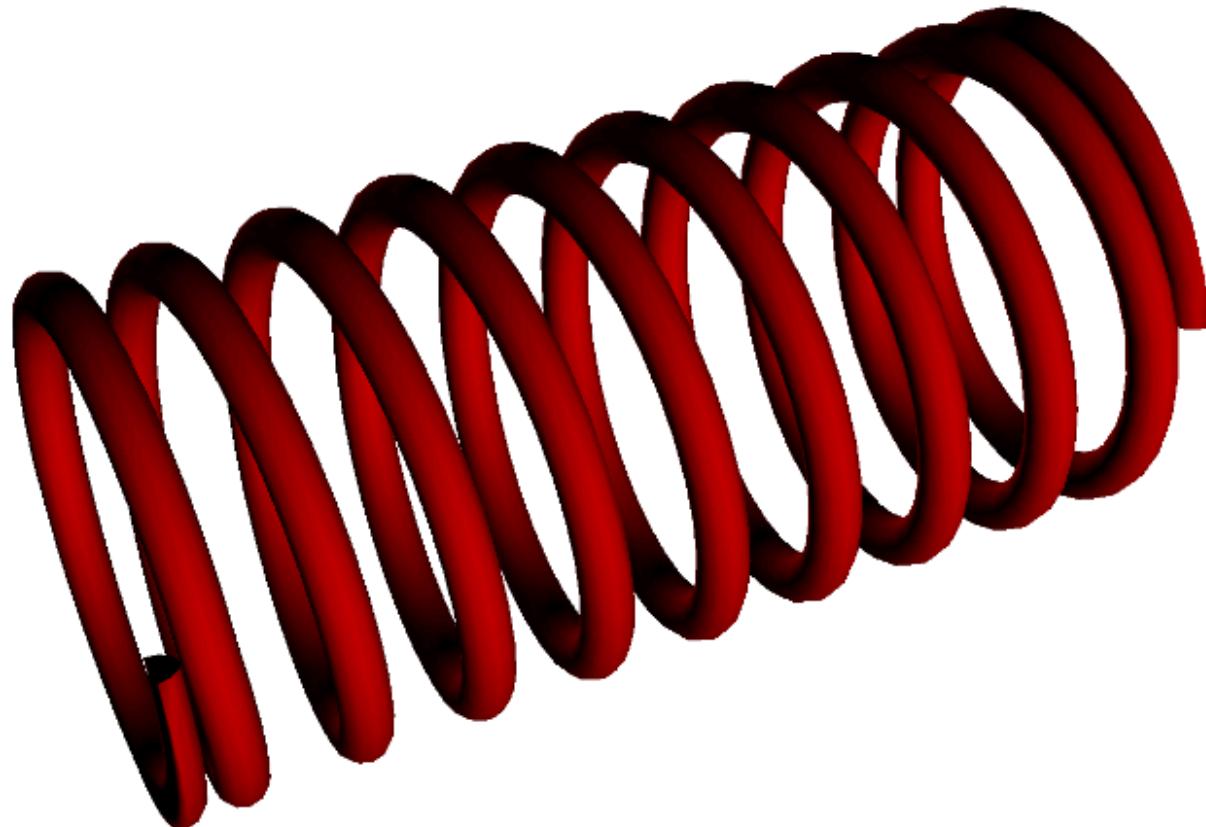
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Secret of Success



1. Quality education.
2. Experience, and the ability to learn from it.
3. The ability to get along with others and work on a team.
4. Continuous improvement of yourself.
5. Some luck.

Benefits of Wisdom



Quality Education

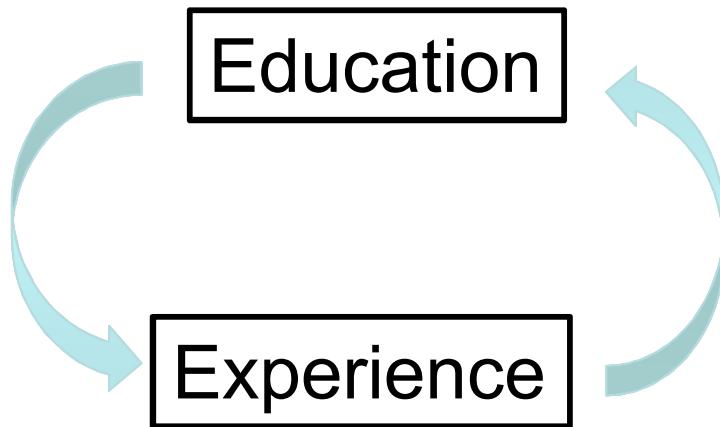
1. Grades – The higher your GPA, the more opportunities you will have.
2. Test Scores - The higher your test scores, the more opportunities you will have.
3. Education – More is *usually* better, depending on the field.
4. Common Sense - Can't be taught; however, it can be ignored.



Experience

1. Internships – Paid/unpaid. Gain experience in the field you have selected.
2. Undergraduate Research – Find out how science and engineering is performed. See if you like this before you consider graduate school.
3. Get a Job – Welcome to life!
4. Learn and apply – So you can get a better job.

Education/Experience Relationship



Education Path

Family History

Great grandparents emigrate to USA, end of the 19th Century.

Italians, Poles, Irish

Grandparents worked blue collar jobs: handyman, baker, seamstress.

They worked hard, never complained, and wanted better for their children.

My parents were the first generation to attend college.

Beneficiaries of their parents' hard work.

It never occurred to me that I was not going to college.

I have never forgotten where and who I have come from.

Education Path

Where I am from

Lehigh Valley; Allentown-Bethlehem-Easton

Home to:

Bethlehem Steel

Mack Trucks

Bell Labs

PP&L

Air Products

And more!



Education

What I thought I knew

I had to get a college education if I didn't want to work in the factories.

Northampton Area Community College, 1979 to 1980



Bachelors of Science, Chemistry, Lehigh University, 1980 to 1983



Masters of Science, Chemistry, University of New Mexico 1986 to 1991



Education

What I liked, and what I thought I wanted to do.

Chemistry made sense to me.

I wanted to do 'science.'

Environmental movement started in the early 1970s.

Environmental chemistry seemed like a good way to merge my interests.

Education



LEHIGH UNIVERSITY

Good

Had a brand new chemistry building.

Has a national reputation for excellence in science and engineering.

Small class size.

Bad

Expensive private school

Highly competitive

Irrational

It wasn't Penn State

Incidental

Had an environmental
chemistry program

Education

Good

1. Able to take aquatic chemistry, radiochemistry, microbiology.
2. Able to take catalyst chemistry, polymer chemistry, inorganic chemistry.
 - a) Got to synthesize really neat things in inorganic lab.
3. Undergraduate research: Methanol from synthesis gas, using gas chromatography analysis.

Bad

I got a 'D' in Analytical Chemistry

Education

Irrational

I didn't want to do environmental work any more, there was no money in it.

Incidental

I started attending weekly chemistry seminars listening to visiting chemistry professors; I was usually the only undergraduate there.

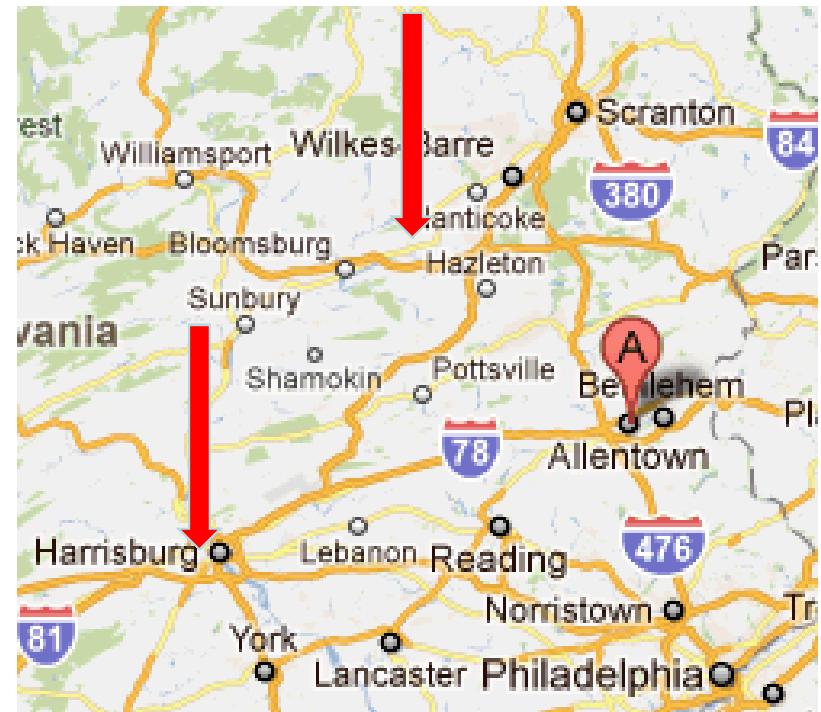
I started reading (but not comprehending) chemistry journals.

Why? Well, this is my career choice, so I should find out what is going on.

Experience

Internship

1. Normally, students got internships summer of their junior year.
2. I started looking the summer of my sophomore year.
3. I got a job doing environmental impact work for a nuclear power plant.



Experience, continued

Internship

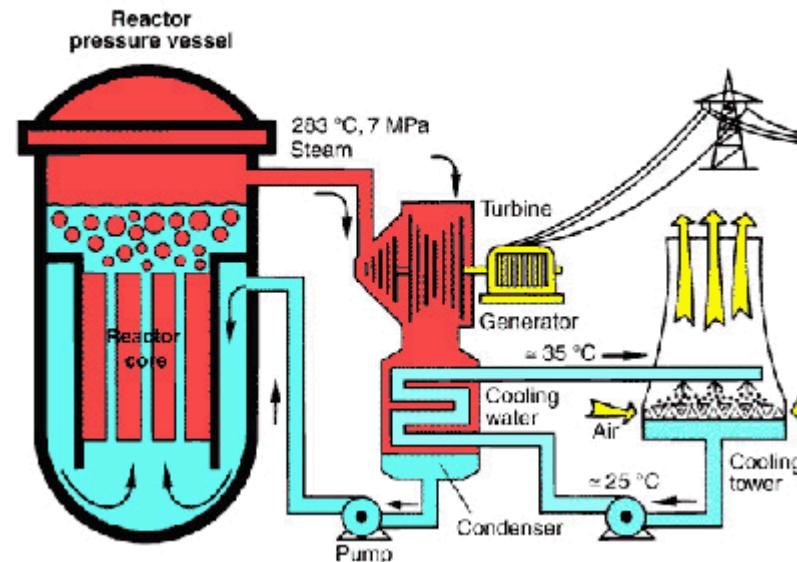
1. I was able to keep this job for 14 months, then go back after I graduated.
2. I was able to pay for some of my undergraduate education.
3. I was responsible for the field work.
4. My manager had me get complete security clearance paperwork in case I had to 'go into the plant.'
5. It had nothing to do with chemistry; I was a 'farmer' during the summer and did emergency planning, health physics, and other office work during the winter time.
6. Learned to balance work and school, since I went to the office whenever I wasn't in class.

Experience, first job

Chemistry Technician

Analytical Chemistry

1. Radiochemistry, water chemistry, environmental chemistry.
2. Learned how to fix and maintain equipment.
3. We produced electricity.

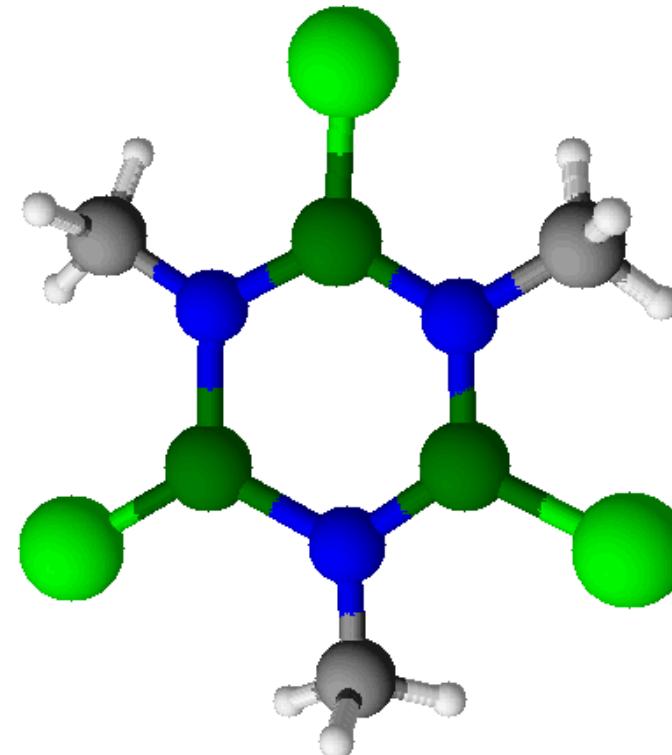


Graduate School



Synthetic Inorganic Chemistry

1. Pre-ceramic polymers, molecules.
2. I was doing Science!
3. Got to take a class taught by some Sandia guys.
4. Best of times/worst of times.



Experience, 2nd job

Chemistry Instructor

Analytical Chemistry, nuclear power

1. Radiochemistry, water chemistry, environmental chemistry.
2. Taught new technicians how to fix and maintain equipment.



Experience, 3rd job

Senior Scientist

WIPP

1. Ion Chromatography
2. Gas Chromatography/mass spectrometry.
3. Worked with some scientists from Sandia on some experiments.



Experience, 4th job

Senior Scientist

WVDP

1. Radiochemistry
2. Hot cell analytical chemistry methods
3. Ion chromatography



Experience, 5th job

Staff Member

Sandia National Labs

1. Analytical Chemistry
2. Synthetic Chemistry
3. Teach chemistry to FBI.
4. Manage programs.
5. Travel when I want to.
6. Meet interesting people.



The reason I was hired was due to the sum of my experience.

Experience, fifth job

As a Staff Member at Sandia

1. Make a bunch of money? *If you don't like what you are doing, it doesn't matter what you get paid.*
2. Work on interesting projects that matter to me. *See #1.*
3. Be surrounded by smart, interesting people that have different backgrounds. *You bet.*
4. Win international recognition and renown? *Less likely, and less important.*

Secret of Success



1. Quality education.
2. Experience, and the ability to learn from it.
3. The ability to get along with others and work on a team.
4. Continuous improvement of yourself.
5. Some luck. ***Luck is where preparation meets opportunity.***

Secret of Success

Good luck on your journey.

Thanks for your time.

Questions?

