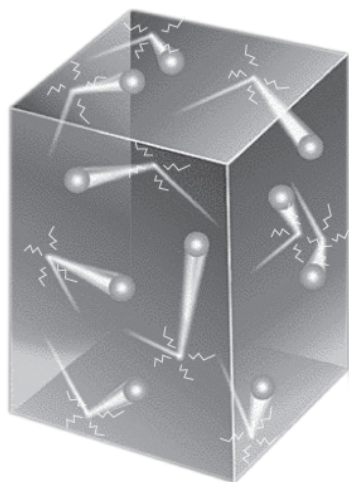


SANTA BARBARA CITY COLLEGE

32nd ANNUAL FACULTY LECTURE



Selected by his peers,

Dr. Michael Young presents

Molecular Motion Mania = M^3

March 17, 2011

2:30 p.m.

Sports Pavilion

East Campus

Santa Barbara City College

Reception Follows



SANTA BARBARA CITY COLLEGE

ANNUAL FACULTY LECTURES

This is the 32nd in a series of lectures wherein a distinguished Santa Barbara City College faculty member is chosen by colleagues to deliver an address on a scholarly subject of general interest.

THE CRITERIA FOR SELECTION

Outstanding classroom teaching, counseling, or librarianship, unselfish, dedicated faculty service to Santa Barbara City College.

PREVIOUS FACULTY LECTURE HONOREES

Dr. Robert Casier	1979-80
Mr. Henry H. Bagish.....	1980-81
Dr. Charles R. Courtney.....	1981-82
Dr. Harold M. Dunn.....	1982-83
Dr. John Kay	1983-84
Mr. Raymond O'Connor.....	1984-85
Dr. Barbara S. Lindemann	1985-86
Dr. Elwood Schapansky.....	1986-87
Dr. George E. Frakes.....	1987-88
Dr. Elizabeth Hodes	1988-89
Dr. Jack R. Ullom.....	1989-90
Dr. Curtis B. Solberg.....	1990-91
Ms. Diane Johnson Handloser	1991-92
Dr. Robert J. Cummings.....	1992-93
Mr. John C. Egger.....	1993-94
Mr. Michel Masson	1994-95
Dr. Gary L. Carroll.....	1995-96
Mr. David N. Lawyer, Jr.	1996-97
Mr. Joseph P. White.....	1997-98
Dr. Manoutchehr Eskandari-Qajar	1998-99
Dr. Jeannette Webber	1999-00
Dr. Peter Haslund.....	2000-01
Ms. Genevieve B. Anderson	2001-02
Mr. Carl W. Sundbeck.....	2002-03
Dr. Janet Shapiro.....	2003-04
Dr. Peter Georgakis.....	2004-05
Mr. James Chesher	2005-06
Dr. John Clark	2006-07
Mr. Don Barthelmess	2007-08
Dr. Karolyn R. Hanna	2008-09
Dr. Robert Gray.....	2009-10

ABOUT THE LECTURE

What is physics and the value of its study? Surprisingly, few, even educated people, can answer this question. Not many, even those with advanced degrees, have taken a formal physics class. So, one theme of today's lecture is the answer to this two-part question.

Physics is the study of the physical world – The rules, if you will, of what can and cannot happen and why. These “rules,” or laws as we like to call them, give us the skills needed to explain the hows, whys, whats, and whens of the physical world. Plus, knowing the “rules,” coupled with creativity, gives us the skill to build the “never-before.” For example, to build a world run on alternative energies, one needs to understand all the “rules” of energy to know what can and cannot happen and why. Putting the “rules” together in a new and creative way will get one to the “never-before.” That is exciting.

The second theme of today's lecture is how physics is structured. That is, physics is about knowing how to apply a few powerful, fundamental concepts to explain a universe of physical phenomena. The fundamental concept for today's lecture is the “Kinetic Theory of Matter.” Hopefully, by the end of the lecture, the audience will see how the “Kinetic Theory of Matter” explains a large series of phenomena from astronomy to zoology and everything in between.

The third theme of today's lecture is to explain the “Kinetic Theory of Matter” itself. The “Kinetic Theory of Matter” simply states that all matter is made of atoms/molecules that jiggle in random motion and jiggle faster with higher temperatures. This very simple microscopic idea explains numerous macroscopic properties like pressure, temperature, expansion, buoyancy, engines, strength and flexibility of material, airplane flight, explosions, sound waves, etc. It is this third theme, the “Kinetic Theory of Matter,” which serves as an example to demonstrate the second theme.

The fourth and final theme of today's lecture is to show how education can, and perhaps should, be both educational and entertaining; a little known word called “edutainment.” Today's lecture is designed with numerous short, real-time experiments, pictures, movies, and animations intended for the purpose of enjoyment and instruction. The educational level of the lecture, and some would say mental level of the lecturer as well, is fifth grade. So, hopefully, all in attendance will comprehend and take pleasure in the fundamental phenomena. Or, as the lecturer often tells his general educational classes, “If you don't find these ideas and experiments fun, perhaps at least you will observe how others, such as myself, find it pleasurable.”

ABOUT THE LECTURER

Dr. Michael Young grew up in the East Los Angeles county area and is a proud product of the California educational system. His first step into physics can be traced to his middle school teachers. Somehow, they saw a talent he didn't. While he was busy riding bicycles, assembling and disassembling "stuff," and lighting the canyons of Los Angeles on fire (don't ask), they recommended he be placed in a college preparation physical science class his freshman year of high school. After his first day at high school, and not being in the same class as his friends, he asked to be transferred from this class to one with all his friends. Luckily for him, the counselors were overworked and could not see him for five weeks. By then, he found that not only was he getting an A, but he loved science because it explained how things worked and was intellectually challenging.

That freshman year, he had two outstanding teachers - one in math and the other in science. Four years later, he had many other outstanding teachers. One teacher, Mr. Edmonson, was his physics and math teacher. Mr. Edmonson not only made math and science fun and active, but correlated it to the real world. After all, Mr. Edmonson had worked on the Manhattan Project. Dr. Young was amazed at how physics applied a few powerful, fundamental concepts to explain a universe of physical phenomena. He entered college, at Point Loma Nazarene University in San Diego California, as a physics, engineering, math, or chemistry major, but quickly ruled the others out, as physics seemed, in his view, far more amazing, engaging, and intellectually challenging.

At college too, he had an astounding set of teachers who made science practical, interesting, challenging, and lively. After finishing his bachelor's degree in San Diego, he moved back to the Los Angeles area to attend UCLA where again he was fortunate enough to have some more incredible teachers (Can you believe their names were Bert and Ernie?). At UCLA, he completed his M.S. and Ph.D. in physics. Enjoying the applied side of physics, his Ph.D. was a cross discipline study in the field of photonics, or lasers, with both the school of science and the school of engineering.

Dr. Young believes his background gives him a unique perspective for teaching physics at the community college level. First, as were examples to him, he believes physics should be dynamic, entertaining, and practical. Lectures should be delivered with an infectious passion and challenge. Second, his cross discipline studies in both schools of physics and engineering give him the expertise to teach and reach the two major groups in his calculus-based physics classes - the science majors and the engineering majors. And third, attending public schools and growing up in LA County, he has real world dealings and understandings of diverse population groups.

Dr. Young has extensive roots in community activities. He shares his expertise and excitement of physics with elementary school students and their teachers, called "Physics Phun Phridays." Today's lecture on molecular motion developed from these visits to kindergarten through sixth grade classes. He also serves on the community advisory budget committee for his local K-12 school district, Ventura Unified. He spends a significant amount of his time and work committed to youth sports programs. He currently serves on the Board of Directors for the Ventura County Track Club Tigres. Also, over the past nine years, he has personally coached 19 youth sports teams from baseball, soccer, track, and basketball. Many of you here today will remember his time raising money for PONY, Protect Our Nations Youth, baseball.

Dr. Young has also taught Sunday School and guided middle school activity nights. Another middle school program was his work with Light-Speed, a two-day NASA sponsored program designed to expose middle school students to science and technology.

At SBCC, he has served on the Academic Senate and numerous faculty committees such as the ITC and the Compressed Calendar Committee. He has served as Department Chair for over 10 years and chaired ITC. In his early years at SBCC, he was the Faculty Advisor for the Natural Philosophers Club and the Gaming Club.

Surprisingly, Dr. Young never planned a career in teaching. His career goals were always research and development of photonic systems. His first step toward a teaching career started his second year of college. He was "drafted" by the math faculty to teach/tutor for their self-paced, independent study math program. Following that, he was "drafted" by the physics faculty to teach physics labs. Within his first year of graduate school at UCLA, he was promoted to Head Teaching Assistant and directed their program to train incoming teaching assistants. In his second year, he won the "Most Outstanding Teaching Assistant" award. Yet, in spite of all these enjoyable jobs and positive feedback in the area of teaching, his career plans did not change. Late in his graduate school career and at the insistence of some math faculty, he taught his first community college mathematics class. These soon grew into teaching of both math and physics followed by additional teaching jobs at other community colleges. He soon won the "Outstanding Adjunct Teaching Award." At this point, he decided to continue to teach at the community college level until he was no longer having fun. Twenty years later, he is still saying the same thing, but now doubts if he will ever stop having fun.

ACKNOWLEDGEMENTS

I am indebted and grateful to many people in this magnificent adventure called life. First and foremost, I am thankful to my wife, Renee'. Not only is she my best friend and mother to my three high-energy boys, but she is my helpmate that allows me the freedom to excel in my "missions" of life.

I am also appreciative of my lab technician, Don Ion. Without him, our department could not function the way it does. Because of his hard work and dedication to the department and the students we serve, we have a student-centered program unmatched in any community college. Even today's lecture would not be possible without him.

I esteem my many colleagues at SBCC both at large and especially within my division and department. The collegial atmosphere and uplifting support are second to none. I look forward to coming to campus each and every day.

I acknowledge the administration for making this a wonderful place to work. I have served under three different college administrations and each one has supported the sciences in general and physics in particular with enormous respect. Each has given me the resources and academic freedom to thrive.

I greatly value my students. For without them, I would have no audience. Their thirst for knowledge makes teaching a real joy and keeps me challenged.

I cherish my family in general and parents in particular, for their support and unconditional love that have made me into the person I am today. I treasure my three boys, Ryan, Tyler, and Dylan, for teaching me how to entice a K-6 audience into scientific endeavors.

I praise all the individuals, too numerous to name here, who worked to make today's program happen.

I am obliged to God and my religious beliefs for giving me an attitude that a career is far more than a paycheck.

Not many can say, as I can, that there is no other job better matched for my talents. The support of the college, the enthusiasm of the students, and the joy of knowledge combine together in this small department in a wonderful and amazing way.

DEDICATION

I dedicate this lecture to all my current, former, and future students. They are the ones who started a grassroots effort to nominate me for Faculty Lecturer of the Year. I am flattered that they would think a campus-wide physics lecture would be interesting to all. I truly believe that I have the best students in the world! Physics is a very demanding subject and requires long hours and much dedication. I am always amazed how my students rise to the challenge and with a positive attitude. They truly are world class and I am grateful to be teaching wonderful students in a discipline I love.

*"One person can make a difference,
and everyone should try."*

John F. Kennedy

*"The most incomprehensible thing about the
world is that it is comprehensible."*

Albert Einstein

