





Graduate Commencement

May 12, 2016 | Marv Kay Stadium, Golden, Colorado

Board of Trustees

Mr. Stewart Bliss

Mr. Timothy J. Haddon '70

Mr. Thomas E. Jorden,
Vice Chairman '80

Mr. James Spaanstra,
Chairman

Ms. Patty Starzer '83

Adm. Richard Truly

Ms. Frances M. Vallejo '87

Dr. Wendy Harrison,
Faculty Trustee

Mr. Tyrel Jacobsen '16,
Student Trustee

Anthem from the "CSM Commemoration Overture"

Processional

Welcome

Dr. Paul C. Johnson, President

National Anthem

The CSM Natural Miners

Student Address

Address

Senator Owen Hill

Presentation of the Class of 2016 to the Board of Trustees

Dr. Paul C. Johnson

Acceptance of Class

Mr. James Spaanstra

Presentation of Candidates for Graduate Degrees

Dr. Thomas Boyd, Provost

Conferring of Graduate Degrees

Dr. Paul C. Johnson

Announcement of Masters Degree Recipients

Dr. Bettina Voelker, Dean of Graduate Studies

Announcement and Hooding of Doctoral Degree Recipients

Dr. Anthony M. Dean, Vice President for Research

Presentation of Rath Research Award

Dr. Bhatka B. Rath, Associate Director of Research for Materials Science and Component Technology, Naval Research Lab

President's Remarks

Dr. Paul C. Johnson

Alma Mater

The CSM Natural Miners

Recessional

(Audience is requested to stand and remain in place)

MASTER OF ENGINEERING CLASS OF 2016

MASTER OF SCIENCE

College of Earth Resource Sciences and Engineering

Dr. Ramona M. Graves, Dean

Mining Engineering Department

Dr. Priscilla P. Nelson, Department Head

Master of Engineering **Engineer of Mines**

Yu-Ting Yu Taipei, Taiwan

Master of Science **Mining and Earth Systems Engineering**

Vinay Duddempudi Vijayawada, India
 Zoheir Khademian Saveh, Iran
 Chelsea A. Pomeroy Centennial, Colorado
 Matthew C Schreiner Hamburg, New York

Geology and Geological Engineering Department

Dr. Paul Santi, Department Head

Professional Master **Mineral Exploration**

Chelsea A. Pomeroy Centennial, Colorado
 Jacob A. Smith Blanca, Colorado

Master of Science **Geological Engineering**

Ethan James Faber St. Louis, Missouri
 Benjamin David Haugen Rapid City, South Dakota
 Jacquelyn A Negri Bedford, New Hampshire
 Joshua Charles Stewart St. Marys, Canada

Master of Science **Geology**

Steffen Michael Ball Milan, Michigan
 Stephen W. Brennan Pittsburgh, Pennsylvania
 Lauren Christina Cross Denver, Colorado
 Benjamin A. Dellenbach Gilcrest, Colorado
 Hannah Marie Durkee Boise, Idaho
 Isabel Alida Gary Denver, Colorado
 Andrew Joseph Graham Tulsa, Oklahoma
 Mario Ansony Guzman Colorado Springs, Colorado
 Marcus John Hinricher Lakewood, Colorado
 Marta Danielle Hodan Waldorf, Maryland
 Mandi Brooke Hutchinson Cleveland, Georgia
 Geraldus Adi Listiono Jakarta, Indonesia
 Thomas Drury Lockwood Greene, Rhode Island
 Ashley Kaye Quigley Golden Valley, Minnesota
 Sebastian Ramiro Ramirez Madrid, Spain
 John Elliot Stamer Winnetka, Illinois

Master of Science **Hydrology**

Anthony M. Actis Colorado Springs, Colorado
 Aaron Jacob Bandler Medford, Oregon
 Allison Johnston Concord, California

Petroleum Engineering Department

Dr. Erdal Ozkan, Department Head

Master of Engineering **Petroleum Engineering**

Rammy Mohammed Al-Abssi Denver, Colorado
 Samer Mohammed Al-Abssi Denver, Colorado
 David Jay Bourquin Glenwood Springs, Colorado
 Kaitlyn R. Gilbert Golden, Colorado
 Ryan Andrew Paldanius Eagle River, Alaska
 Samuel D Schweitzer Greenwood Village, Colorado

Master of Science **Petroleum Engineering**

Jingwei Huang Xuzhou, China
 Asm Kamruzzaman Dhaka, Bangladesh
 Kurt Peter Livo Lakewood, Colorado
 Thanh Ngoc Nguyen Sai Gon, Vietnam
 Andre Paul Panfiloff Seattle, Washington
 Andrew John Rixon Deerfield, Illinois
 Carver Haentjens Stone Parker, Colorado
 Di Zhang Qing Yang, China
 Mengnan Zhou Beijing, China
 Ziming Zhu Dongying, China

Geophysics Department

Dr. Terence K. Young, Department Head

Professional Masters **Petroleum Reservoir Systems**

Michelle Elyse Rigsby Houston, Texas
 Darcy Kathleen St. Aubin Wheat Ridge, Colorado

Master of Science **Geophysics**

Ben Peter Andrews Port Isaac, United Kingdom
 Jennifer Felicity Brush Rancho San Margarita, California
 Emily Susan Butler Plano, Texas
 Jarred Daniel Eppehimer Madisonville, Louisiana
 Alexandra Kate Grazulis Palmer, Alaska
 Alexandria Nicole Mabrey The Woodlands, Texas
 Staci Kathleen Mueller Billings, Montana
 Stephen William Paskvich Stuarts Draft, Virginia

Economics and Business Division

Dr. Michael Walls, Division Director

Master of Science **Engineering and Technology Management**

Raphael Somayina Akaeze Ogwashi-Uku, Nigeria
 Joshua Neil Bacon Farmington, New Mexico
 Anthony Nicholas Boyd Tempe, Arizona
 Kodi C. Burns Castle Rock, Colorado
 Ryan Donovan Call Henderson, Nevada
 Scott Caywood San Jose, California
 Joseph Michael Corder Aurora, Colorado
 Adam Wayne Duran Littleton, Colorado
 Benton R. Ellis III Dallas, Texas
 Parker R. Fawcett Fort Collins, Colorado
 Connor Austin Fritcher Houston, Texas
 Kyle James Gilbert San Diego, California
 Margaret Mary Golz Carbondale, Illinois
 Matthew Patrick Hamilton Denver, Colorado
 Joshua Forrest Hoffman Johnstown, Colorado
 Jacob Warren Kirkley Golden, Colorado
 Melinda Leann Krebs Plano, Texas
 Hea Jung Lee Seoul, South Korea

Grant Thomas Maloney Denver, Colorado
 Joshua Ben Martinez Highlands Ranch, Colorado
 Tanner M. McManus Greeley, Colorado
 Oluwaseun Babatunde Ogunmodede

Castle Rock, Colorado
 Adam L. Pring Colorado Springs, Colorado
 Andrew William Renfrew Colorado Springs, Colorado
 Benjamin Paul Shideler Silt, Colorado
 James Woo Los Angeles, California

Master of Science **Mineral and Energy Economics**

Fernando Jose Alvarado Blohm Caracas, Venezuela
 James Bradley Becker Lake Milton, Ohio
 Lindon Scott Belshe Parker, Colorado
 Stephanie Marie Berry Detroit Lakes, Minnesota
 Weston Shea Carloss Lakewood, Colorado
 Ivan Bryce Goskirk Oakland, California
 Andrew Logan Gulley Littleton, Colorado
 Charles Barrett Hepper Norfolk, Virginia
 Haeyeon Kim Seoul, South Korea
 Joel Christopher Leonard Birmingham, England
 Daze Li Zhengzhou, China
 Franz Dennis Martinez Lima, Peru
 Joseta S. Neufville Monrovia, Liberia
 Kelly Elizabeth Shanley Fairfield, Connecticut
 Jaren Dell Eugene Williams Missoula, Montana

Liberal Arts and International Studies Division

Dr. Hussein Amery, Division Director

Master of International **Political Economy of Resources**

Shay White Lemond Atlanta, Georgia
 Katherine Ann Robert Waterford, Michigan
 Samuel Eolden Trippe Traverse City, Michigan

College of Applied Science and Engineering

Dr. Michael J. Kaufman, Dean

George S. Ansell Department of Metallurgical and Materials Engineering

Dr. Ivar Reimanis, Department Head

Master of Engineering **Metallurgical and Materials Engineering**

Adam Paul Solomon Orinda, California

Master of Science **Materials Science**

Chaudhry Ali Usman Lahore, Pakistan

Master of Science **Metallurgical and Materials Engineering**

Ana Luiza Azevedo de Araujo Ouro Preto, Brazil
 Camille Marie-Pauline Fleuriaux Saintes, France
 Bernard Fosu Kenyasi, Ghana
 John William Friesinger Wilmington, North Carolina
 Sumedh Gostu Hyderabad, India
 Christina Elizabeth Hensley Hoover, Alabama
 Brian Kagay Dunedin, Florida
 Josue Nduwa Mushidi Likasi, Congo
 Douglas James Schriener Findlay, Ohio
 Caleb William Stanton San Diego, California
 Mark Lawrence Strauss Mesa, Arizona
 Sami M. Syammach Gardnerville, Nevada
 Yicheng Zhang Huanggang, China

Chemical and Biological Engineering Department

Dr. David Marr, Department Head

Master of Science **Chemical Engineering**

Emily Joy Campion Rice, Minnesota
 Piyush Nilkanth Chaudhari Bhusawal, India
 Muhammad Zafar Iqbal Chiniot, Pakistan
 Muhammad Naveed Khan Lahore, Pakistan
 Christopher Moran Norfolk, Massachusetts
 Prithvi Vijayamohan Bangalore, India

Chemistry Department

Dr. David T. Wu, Department Head

Master of Science **Chemistry**

Ryan Scott Czarny Conroe, Texas
 Charles Adelbert Ponyik Mayfield Heights, Ohio

Master of Science **Geochemistry**

Angela Grace Barber Glenwood Springs, Colorado
 Katherine Ann Ebeling Topeka, Kansas

Physics Department

Dr. Jeff Squier, Department Head

Master of Engineering **Nuclear Engineering**

Jaime Johnathan Baker Elizabeth, Colorado
 Pavlo Ivanusa Aurora, Colorado
 Peter E. Rottenborn Cleveland, Ohio
 Casey J. Spitz Sterling, Colorado

Master of Science **Applied Physics**

Gina Marie Eldridge Centennial, Colorado
 Brooke Rhiannon Faulkner West Des Moines, Iowa
 Abigail Marie Meyer Northville, Michigan
 Kevin Scott Rozmiarek Liberty Hill, Texas

College of Engineering and Computational Sciences

Dr. Kevin L. Moore, Dean

Applied Mathematics and Statistics Department

Dr. Willy A. Hereman, Department Head

Master of Science **Applied Mathematics and Statistics**

Computational and Applied Mathematics Specialty

Alexander E. Charlesworth Portland, Oregon
 Paul Marcus Diaz Conifer, Colorado
 Brandon Steven Rundquist Rochester, Minnesota
 Holly Diane Wenham Phoenix, Arizona
 Steven Andrew Wray Denver, Colorado

Master of Science **Applied Mathematics and Statistics**

Statistics Specialty

Evalyn Vaera Breikss Elizabeth, Colorado
 Colin R. Eberl-Coe Arvada, Colorado
 Caitlyn Hannum Stony Point, New York

Civil and Environmental Engineering Department

Dr. John E. McCray, Department Head

Master of Science **Civil and Environmental Engineering**

Dustin Markas Burner	Rifle, Colorado
Carmella J. Caltagirone	Fort Walton Beach, Florida
Thomas Carroll	Seattle, Washington
Kendall S Gadd	Mililani, Hawaii
Kyle Alan Hampton	Henderson, Nevada
Evon E. Harmon	Fort Collins, Colorado
Edward A. Huss III	Thornton, Colorado
Michelle Ann Peters	Chino Hills, California
Travis Lee Stevens	Flower Mound, Texas
Barbara Frances Thunder	Cardiff-by-the-Sea, California
Ella Louise Walker	Stillwater, Oklahoma
Skylar Huzyk Zilliox	Denver, Colorado

Master of Science **Environmental Engineering Science**

Travis Borrillo-Hutter	San Diego, California
Michelle Marie Kelble	Lakewood, Colorado
Emily Antoinette Kraus	Clarence, New York
Todd Alan VanderWall	Rockford, Michigan
Meghan Alyssa Way	Colorado Springs, Colorado
Veronika Zhiteneva	Chernogolovka, Russia

Master of Science **Hydrology**

Taylor Morgan Baird	Fort Collins, Colorado
Ryan Patrick Edgley	Fremont, California
Evan Michael Thomas Ford	Golden, Colorado
Brandon Leslie House	Paso Robles, California
Samuel Saxe	Madison, Connecticut
Jessica Anne Shirey	Loveland, Colorado

Master of Science **Underground Construction and Tunneling**

Maxwell James Engen	Deerwood, Minnesota
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Electrical Engineering and Computer Science Department

Dr. Atef Elsherbeni, Department Head

Master of Science **Computer Science**

Erol Sheethal Cornelio	Udupi, India
Ryan Matthew Dusina	Littleton, Colorado
Madalyn Jo Gort	Oracle, Arizona
Saman Hakimifar	Tehran, Iran
James Tyler Lyons	Pueblo, Colorado
Stacey Osborn	Edmond, Oklahoma
Brian J. Reily	Manassas, Virginia
Adithya Uligere Narasimhamurthy	Sagar, India

Master of Science **Electrical Engineering**

Scott Patrick Harris	Broomfield, Colorado
Garrett R. Hoch	Wichita, Kansas
Jacob Andrew Juett	Flower Mound, Texas
Adam Gregory Longoria	Colorado Springs, Colorado
Jonathan William Reasoner	Delaware, Arkansas

Mechanical Engineering Department

Dr. Gregory Jackson, Department Head

Master of Engineering **Nuclear Engineering**

Caitlin Renee Stack	Roseville, California
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Master of Science **Mechanical Engineering**

Mohammed Nasser Alyami	Nejran, Saudi Arabia
Brendan Joseph Casias	Littleton, Colorado
Aaron Michael Childers	Montgomery, Texas

Steven M. Fuchs	Colorado Springs, Colorado
Luke M. Graber	Morrison, Colorado
Ryan L. Hemphill	Los Alamos, New Mexico
Garrison M Hommer	Altoona, Wisconsin
Yi-Hsiu Hung	Longtan, Taiwan
Keshini Aoife Keane	Englewood, Colorado
Benjamin L. Kee	Arvada, Colorado
Madison Andrew Kelley	Blaine, Minnesota
Moises Mendez	Denver, Colorado
Richard Tinh Huu Nguyen	Denver, Colorado
Adam R. Short	Fort Collins, Colorado
Kevin S. Tan	Aurora, Colorado
Trace R. Tomme	Austin, Texas
Benjamin M. Traquair	Tucson, Arizona
Jeremy David Webb	Golden, Colorado
Mark R. Wilbur	Anchorage, Alaska
Eric Patrick Willems	Parker, Colorado
Sara Grace Winberry	Conroe, Texas
Kevyn Christopher Young	Loveland, Colorado

DOCTOR OF PHILOSOPHY CLASS OF 2016

College of Earth Resource Sciences and Engineering

Dr. Ramona M. Graves, Dean

Mining Engineering Department

Dr. Priscilla Nelson, Department Head

Doctor of Philosophy **Mining and Earth Systems Engineering**

Saqib Ahmad Saki	Jhang, Pakistan
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Advisor: Juergen Brune

Gas Ventilation Borehole Design and Performance Optimization for Longwall Coal Mining Using Computational Fluid Dynamics

Geology and Geological Engineering Department

Dr. Paul Santi, Department Head

Doctor of Philosophy **Geology**

Eider Hernandez Bilbao	Gernika-Lumo, Spain
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Advisors: J.F. Sarg. & Stephen Sonnenberg

High-Resolution Chemostratigraphy, Sequence Stratigraphic Correlation, Porosity and Fracture Characterization of the Vaca Muerta Formation, Neuquén Basin, Argentina

Long Wu

Baoji, China

Advisor: Bruce Trudgill

Foreland Flexural Extension and Salt Diapir Reactivation in Oblique Extensional Systems

Doctor of Philosophy **Hydrology**

Laura Elizabeth Condon	Boulder, Colorado
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Advisor: Reed Maxwell

The Role of Large-Scale Water Management in Natural Systems: Connections, Interactions and Feedbacks

Jennifer Lynn Jefferson

Nora Springs, Iowa

Advisor: Reed Maxwell

Exploring Sensitivities of Latent Heat Parameterizations Using a Coupled, Integrated Hydrologic Model

Petroleum Engineering Department

Dr. Erdal Ozkan, Department Head

Doctor of Philosophy **Petroleum Engineering**

Binh Thanh Bui Hai Duong, Vietnam

Advisor: Azra Tutuncu
A Multi-Physics Model for Enhanced Oil Recovery in Liquid-Rich Unconventional Reservoirs

Chunlei Liu Shandong, China

Advisor: Jennifer Miskimins
Optimizing Hydraulic Fracture Spacing and Lateral Well Spacing in Tight/Unconventional Resource Development Through Fully Coupling Stress Shadowing Effects and Fluid Flow – an Integrated Approach

Anton Padin Deben Galicia, Spain

Advisor: Azra Tutuncu
Experimental and Theoretical Study of Water and Solute Transport Mechanisms in Organic-rich Carbonate Mudrocks

Russell D Roundtree Durango, Colorado

Advisor: Jennifer Miskimins
Experimental Validation of Microseismic Emissions from a Controlled Hydraulic Fracture in a Synthetic Layered Medium

Geophysics Department

Dr. Terence K. Young, Department Head

Doctor of Philosophy **Geophysics**

Nathan Leon Foks Great Harwood Lancashire, England

Advisor: Yaoguo Li
Using Adaptive Sampling and Triangular Meshes for the Processing and Inversion of Potential Field Data

Nishant Kamath Durgapur, India

Advisor: Ilya Tsvankin
Full-Waveform Inversion in 2D VTI Media

Satyan Singh Las Lomas, Trinidad and Tobago

Advisor: Roelof Snieder
An Inverse Scattering Approach to Imaging Using Marchenko Equations in the Presence of a Free Surface

Xinming Wu Loudi, China

Advisor: David Hale
3d Seismic Image Processing for Interpretation

Economics and Business Division

Dr. Michael Walls, Division Director

Doctor of Philosophy **Mineral and Energy Economics**

Andrew Logan Gulley Littleton, Colorado

Advisor: Edward Balistreri
Valuation of Ecosystem Services Impacted by Mine Site Pollution

Grant Mark Nulle Gillette, Wyoming

Advisor: Graham Davis
Migrant Labor Supply in A Booming Non-Renewable Resource Economy: Cure and Transmission Mechanism for De-Industrialization?

Jacquelyn Ryan Pless Wallingford, Pennsylvania

Advisor: Harrison Fell
Three Empirical Essays in Energy Economics

Fadli Rahman Jakarta, Indonesia

Advisors: Harrison Fell & Peter Maniloff
The Economics of Subnational Carbon Policy Interactions and Integration

Michael Raymond Redlinger Anchorage, Alaska

Advisor: Ian Lange
Three Essays in Energy and Environmental Economics

College of Applied Science and Engineering

Dr. Michael J. Kaufman, Dean

George S. Ansell Department of Metallurgical and Materials Engineering

Dr. Ivar Reimanis, Department Head

Doctor of Philosophy **Materials Science**

Patrick Max Eduafo Ajumako, Ghana

Advisor: Brajendra Mishra
Investigation Of Recovery And Recycling Of Rare Earth Elements From Waste Fluorescent Lamp Phosphors

John Michael Moseley Castle Rock, Colorado

Advisor: Richard Ahrenkiel
Development of Cathodoluminescence Spectrum Imaging Characterization of CdTe Solar Cells

Stefan Ben Nikodemski Colorado Springs, Colorado

Advisor: Ryan O'Hayre
Modification of Electrical Properties Via Interfacial Manipulation in Novel Oxide Heterostructures

Cassi Alexandria Sweet Houston, Texas

Advisor: Corinne Packard
Spalling Fracture Behavior in (100) Gallium Arsenide

Chaudhry Ali Usman Lahore, Pakistan

Advisor: Brajendra Mishra
Anti-Corrosion Behaviour of Barrier, Electrochemical and Self-Healing Fillers in Polymer Coatings for Carbon Steel In a Saline Environment

Doctor of Philosophy **Metallurgical and Materials Engineering**

Haytham Mohammed Aljabr Al-Ahssa, Saudi Arabia

Advisor: David Matlock
Influence of Crystallographic Texture in X70 Pipeline Steels on Toughness Anisotropy and Delamination

Lee Maxwell Rothleutner Kilgore, Nebraska

Advisor: Chester Van Tyne
Assessment of the Microstructure and Torsional Fatigue Performance of an Induction Hardened Vanadium Microalloyed Medium-Carbon Steel

Mark David Taylor Paris, Texas

Advisor: David Matlock
Effect of Microstructure on the Fracture Response of Advanced High Strength Steels

Doctor of Philosophy **Nuclear Engineering**

Jeremy Allen Washington Prescott, Arizona

Advisor: Jeffrey King
The optimization of an AP1000 fuel assembly for the transmutation of plutonium and minor actinides

Chemical and Biological Engineering Department

Dr. David Marr, Department Head

Doctor of Philosophy **Chemical Engineering**

Erika Paige Brown Colorado Springs, Colorado

Advisor: Carolyn Koh
Studies of Hydrate Cohesion, Adhesion and Interfacial Properties Using Micromechanical Force Measurements

Piyush Nilkanth Chaudhari Bhusawal, India

Advisors: Amadeu Sum & Luis Zerpa Acosta
Development of Hydrate Risk Quantification in Oil and Gas Production

Muhammad Zafar Iqbal Chiniot, Pakistan
 Advisors: Andrew Herring & Matthew Liberatore
Structure-Property Relationships in Graphene/Polymer Nanocomposites

Muhammad Naveed Khan Lahore, Pakistan
 Advisors: Carolyn Koh & Cornelis Peters
Phase Equilibria Modeling of Inhibited Gas Hydrate Systems Including Salts: Applications in Flow Assurance, Seawater Desalination and Gas Separation

Prithvi Vijayamohan Bangalore, India
 Advisor: Amadeu Sum
Experimental Investigation of Gas Hydrate Formation, Plugging and Transportability in Partially Dispersed and Water Continuous Systems

Chemistry Department

Dr. David T. Wu, Department Head

Doctor of Philosophy **Applied Chemistry**

Huiya Gu Taizhou, China
 Advisor: Matthew Posewitz
Metabolic Carbon Partitioning and Nitrogen Utilization in Photosynthetic Microorganisms

Amanda Lee Morgenstern Mosinee, Wisconsin
 Advisor: Mark Eberhart
Gradient Bundle Analysis: A Full Topological Approach to Chemical Bonding

Doctor of Philosophy **Geochemistry**

Kato Tsosie Dee Lawrence, Kansas
 Advisor: James Ranville
Dissolved Organic Carbon (Doc) Characteristics in Metal-Rich Waters and Implications for Copper Aquatic Toxicity

Doctor of Philosophy **Nuclear Engineering**

Michael Anthony Koehl Arlington, Virginia
 Advisor: Jenifer Braley
Relative Fission Product Yield Determination in the USGS TRIGA MARK I Reactor

Physics Department

Dr. Jeff Squier, Department Head

Doctor of Philosophy **Applied Physics**

Jennifer Lee Braid Ottoville, Ohio
 Advisors: Reuben Collins & Nikos Kopidakis
Understanding Efficiency Improvement in Organic Photovoltaics with Molecular Modifiers

Michael John Greco Chicago, Illinois
 Advisor: Charles Durfee
Characterization and Application of Simultaneously Spatio-Temporally Focused Ultrafast Laser Pulses

David Jedrejic New York City, New York
 Advisor: Uwe Greife
Low Energy Stopping Cross Section of Light Ions in Light Gases Using Time of Flight Techniques

Eric William Mayotte Fort Collins, Colorado
 Advisors: Frederic Sarazin & Lawrence Wiencke
Searching for Slow-Developing Cosmic-Ray Showers: Looking for Evidence of Exotic Primaries at the Pierre Auger Observatory

College of Engineering and Computational Sciences

Dr. Kevin L. Moore, Dean

Civil and Environmental Engineering Department

Dr. John E. McCray, Department Head

Doctor of Philosophy **Civil and Environmental Engineering**

Benjamin Michael Wallen Colorado Springs, Colorado
 Advisor: Kathleen Smits
Heat and Mass Transfer Through Disturbed Soil: Multiscale Experimental and Modeling Investigation

Doctor of Philosophy **Environmental Engineering Science**

Jenna L. Shelton Melbourne, Florida
 Advisor: John McCray
Hydrobiochemical Controls and Limitations On Co2 Storage in Enhanced Oil Recovery Reservoirs and on the Occurrence of Methanogenic Crude Oil Biodegradation

Doctor of Philosophy **Environmental Science and Engineering**

Carissa Lynn Homme Monument, Colorado
 Advisor: Jonathan Sharp
Microbial Insights into Enhanced Trace Organic Biodegradation Potential in Water Treatment

Martha J. Hahn Beloit, Wisconsin
 Advisor: Linda Figueroa
Anaerobic Baffled Reactor Pilot: Bridging the Gap to Energy Positive Wastewater Treatment

Electrical Engineering and Computer Science Department

Dr. Atef Elsherbeni, Department Head

Doctor of Philosophy **Computer Science**

Oscar Thyago Jose Duarte Dantas Lisboa Mota Fortaleza, Brazil
 Advisor: Tracy Camp
Extracting and Modeling Commuting Networks from Social Media Communication

Mechanical Engineering Department

Dr. Gregory Jackson, Department Head

Doctor of Philosophy **Operations Research with Engineering**

Barry William King Durant, Iowa
 Advisor: Alexandra Newman
Using Integer Programming For Strategic Underground and Open Pit-To-Underground Scheduling

Michael Scott Scioletti Hyannis, Massachusetts
 Advisor: Alexandra Newman
A Mixed-Integer Program for the Design and Dispatch of a Hybrid Power Generation System

Doctor of Philosophy **Mechanical Engineering**

Nathaniel Todd Pickle Colorado Springs, Colorado
 Advisor: Anne Silverman
Dynamic Balance and Muscle Function in Individuals With and Without Unilateral Transtibial Amputation During Sloped Walking

Doctor of Philosophy **Engineering**

Systems Specialty

Aalhamid Reda Alamin Sirte, Libya
 Advisor: Ruichong Zhang
Modeling Of Acoustic-Emission Wave Propagation in Layered Media



Undergraduate Commencement

May 13, 2016 | Marv Kay Stadium, Golden, Colorado

Board of Trustees

Mr. Stewart Bliss

Mr. Timothy J. Haddon '70

Mr. Thomas E. Jorden,
Vice Chairman '80

Mr. James Spaanstra,
Chairman

Ms. Patty Starzer '83

Adm. Richard Truly

Ms. Frances M. Vallejo '87

Dr. Wendy Harrison,
Faculty Trustee

Mr. Tyrel Jacobsen '16,
Student Trustee

Anthem from the "CSM Commemoration Overture"

Processional

Welcome

Dr. Paul C. Johnson, President

National Anthem

The CSM Natural Miners

Presentation of the Outstanding Student Service Award

Dr. Dan Fox, Vice President for Student Life

Student Address

Alexa Frazier, Lauren Melching, Shae Quigley and Diane Roher

Address

Professor Emeritus Marv Kay

Presentation of the Class of 2016 to the Board of Trustees

Dr. Paul C. Johnson

Acceptance of Class

Mr. James Spaanstra

Presentation of Candidates of Baccalaureate Degrees

Dr. Thomas Boyd, Provost

Conferring of Baccalaureate Degrees

Dr. Paul C. Johnson

Announcement of Baccalaureate Degree Recipients

Dr. Dan Fox, Vice President for Student Life

Dr. Linda Battalora, Teaching Professor, Petroleum Engineering

Recognition of Commissioned Cadets

Colonel John T. Cairney, United States Air Force

Recognition of Retiring Faculty

Dr. Paul C. Johnson

President's Remarks

Dr. Paul C. Johnson

Alma Mater

The CSM Natural Miners

Recessional

(Audience is requested to stand and remain in place)

BACHELOR OF SCIENCE CLASS OF 2016

College of Earth Resource Sciences and Engineering

Dr. Ramona M. Graves, Dean

Mining Engineering Department

Dr. Priscilla P. Nelson, Department Head

Bachelor of Science Mining Engineering

Ryan M. Bevans	Colorado Springs,
Vassil Ivanov Boasherliev	Colorado Arvada, Colorado
Michael David Burkhardt	Avon, Colorado
Nicole Lucia deMontigny	South Bend, Washington
Thomas Conner Hirsh*	Bellingham, Washington
Katherine Nicole Jennings	Arvada, Colorado
Brock Andrew Lane*	Anchorage, Alaska
Brent Christopher Lytle	Walden, Colorado
Nicholas John Mason	Trinidad, Colorado
Sean W. McDaniel	Arvada, Colorado
Kevin Aussie Moran**	San Diego, California
Aaron V. Mull^	Milliken, Colorado
Christopher Andrew Oestreich	Chaska, Minnesota
Brandon Wescott Ostert	Colorado Springs,
Jordan R. Oxborrow	Colorado Ely, Nevada
Levi Dylan Rawlings**	Wheat Ridge, Colorado
Donald Grant Ross*	Bluffdale, Utah
Timothy R. Russo	Westminster, Colorado
Joseph Thomas Waite*	Rosemount, Minnesota
Ryan Arifin Zaini	Jakarta, Indonesia

Geology and Geological Engineering Department

Dr. Paul Santi, Department Head

Bachelor of Science Geological Engineering

Kyle Alexander Amoroso	Columbia, Maryland
Aimee A. Anderson*	Denver, Colorado
Molly Rose Baron*	Northport, New York
Ryan M. Berg	Morrison, Colorado
David Lane Boyd**	Denver, Colorado
Ian Faulkner Campbell	Williamston, Michigan
Daniel Addison Chafetz	Golden, Colorado
Matthew Bradley Coen	Littleton, Colorado
Patrick R. Collins	Andover, Kansas
Brandon Leslie Conaway	Magnolia, Texas
Sean Robert Cowie*	Longmont, Colorado
Daniel Loren Fraser	Kansas City, Missouri
Andreana Christine Galvan	Golden, Colorado
Hannah N. Hamblin	Golden, Colorado
Craig S. Hendrich	Nolensville, Tennessee
Lora Jean Hoopes	Fountain, Colorado
Allison Elizabeth Keator**	Chesterton, Indiana
Andrew Jacob Kerth	Highlands Ranch, Colorado
Kelsey Dian Lewis	Arcadia, Oklahoma
Zoe Kathleen Lyman**	Westminster, Colorado
Madeline Jo Morones	Anchorage, Alaska
Carolyn Celeste Pauly***	Colorado Springs, Colorado
Lyn Pinkus	Lexington, Massachusetts
Tyler James Pitcher	Lakewood, Colorado
Hayley Elaine Purdom	Richardson, Texas
Carolyn E. Reilly	Oxford Junction, Iowa
Preston Stuart Rich	Castle Rock, Colorado

Eric James Rink	Pueblo, Colorado
Elizabeth Ann Starbuck McMillan	Williamsburg, Virginia
Quinton David Weber**	Reynoldsville, Pennsylvania
Melissa Ann Westhoff	Centennial, Colorado
Jenny Lin Wolicki**	Parker, Colorado
Victoria Zsazsa Zahourek*	Loveland, Colorado

Petroleum Engineering Department

Dr. Erdal Ozkan, Department Head

Bachelor of Science Petroleum Engineering

John Michael Ahern	Morrison, Colorado
Nor Aiman Khalidah Ahmad Tarmizi**	Rawang, Malaysia
Adam Bertram Ahnhut**	Dallas, Texas
Karl Louis-Gabriel Akoko	Aurora, Colorado
Marielle Anissa Akoko	Abidjan, Ivory Coast
Bodour Abdulhadi Al-Iraani	Alkhobar, Saudi Arabia
Ghadeer Abdulrauf Alrumaih*	Saihat, Saudi Arabia
Nur Amanina Amir Hamzah	Rawang, Malaysia
Brian Moe Amosa Leiataua	Garden Grove, California
Miguel Alberto R. Arguelles	Broomfield, Colorado
Nicholas G. Aro	Westminster, Colorado
Loren Andrew Awalt	Troy, Missouri
Bryan William Baker	Anchorage, Alaska
Nolan Ryan Beasley	Arvada, Colorado
Chayapod Beokhaimook***	Nonthaburi, Thailand
Nicholas Jason Berry*	Littleton, Colorado
Brenna Marie Boehm	Humble, Texas
Suradech Boonlard	Roi-Et, Thailand
Shea Harry Boynton	Arvada, Colorado
Jacob Davis Burchell*	Broomfield, Colorado
Ashley Nicole Burk	Westminster, Colorado
Dylan T. Bush**	Peyton, Colorado
Justin Alan Cameron	Warrensburg, Missouri
Alejandro Caraveo Meraz	Denver, Colorado
Tevin Anthony Champagne	Houston, Texas
Zhao Chang	Yiyang, China
Chanel Elizabeth Charbonneau	New Castle, Colorado
Daniel Wayne Chase Jr.	Las Vegas, Nevada
Linh Ngoc Thuy Chuong	Ho Chi Minh City, Vietnam
Connor John Clark	Arvada, Colorado
Jared Matthew Clark	Monterey, California
Tanner Joseph Corah	Littleton, Colorado
Bailey Elizabeth Cordero	Littleton, Colorado
Jonathan Colin Crank	Worthington, Ohio
Daniel Aidan Cucarola	Sterling, Colorado
Robert Tucker Randall Darby*	Longmont, Colorado
Jacob Louis Degrace	Golden, Colorado
Daevin Dev**	Klang, Selangor, Malaysia
Sean David Dolfinger	Highlands Ranch, Colorado
Michael Anibal Elliott	Lima, Peru
James Kent Ellis	Littleton, Colorado
Matthew Scott Enger	Lakewood, Colorado
Mohammad Omar Faruque*	Bangladesh, Chittagong
Alexa Jean Frazier***	Anchorage, Alaska
Aaron K. Frey	Lincoln, Nebraska
Scott Mallory Fuller	Winnetka, Illinois
Nicholas Russell Garver**	Fort Morgan, Colorado
Eric David Garza**^	Littleton, Colorado
Douglas Alan Gayer	Denver, Colorado
Cynthia Alexius Jordan Godfrey	Olathe, Colorado
John Travis Gordon	Littleton, Colorado
Christian M. Gougeon**	Las Vegas, Nevada
Nolan D. Greenberg	Ramsey, Minnesota
Jeffrey Allen Grenfell	Arvada, Colorado
Andy Guanhua Han	Aurora, Colorado
Landon Marshall Harrison	Burlington, Colorado

David Daniel Hasz***	Arvada, Colorado	Margarita S Shvachko	New York, New York
Lauren Nicole Headrick	Granite Bay, California	William Carl Siirola**	Centennial, Colorado
Ryan T. Heather	Erie, Colorado	Jagmit Singh*	New Delhi, India
Stephen James Heppell	Centennial, Colorado	Trey Sterling Sloan*	Dewey, Oklahoma
Michael Craig Horacek	Houston, Texas	Brandon Michael Smith	Aurora, Colorado
Yelignan Houessou Sr.	Cotonole, Benin	Holly Amber Smith	Parker, Colorado
Yuqi Hu***	Nanjing, China	Adam Freeman Spalding	Houston, Texas
Mohamad Moussa Jamil	Tyre, Lebanon	Cole Allen Spurgeon	Omaha, Nebraska
Christian Escoria Jimenez	Denver, Colorado	Parker Hylton Stevens*	The Woodlands, Texas
Vishnu Goud Kadirisani	Marlton, New Jersey	Lori Allison Strickland	Katy, Texas
Daniel James Kaim*	Mount Laurel, New Jersey	Anthony Tamayo	Thornton, Colorado
Daniel Andrew Kalish	Monument, Colorado	Catherine Ye Lin Tang**	Kuching, Malaysia
Muhammad Farhan Kamaludin*	Johor Bahru, Malaysia	Yee Wei Teoh***	Sitiawan, Malaysia
Masud Shahriyar Karim*^	New York, New York	Karan Amol Titus	Jakarta, Indonesia
Robert Lee Keller*	Littleton, Colorado	James T. Trammell	Morrison, Colorado
Allan L. Kittle	Littleton, Colorado	Nyana Leigh Tschacher	Gill, Colorado
Brett A. Kovach	Lakewood, Colorado	Brett Aaron Tucker	Wichita, Kansas
Christian X. Kratz	Johnstown, Colorado	Jordan Justus Tucker	Spring, Texas
Christopher J. Lach	Canton, Ohio	Matthew Robert Unger	Idledale, Colorado
Wyatt Austin Lang	Houston, Texas	Reuben Andrew Uribe*	San Antonio, Texas
Zachary William Larson***	Arvada, Colorado	Reginald T. Vair	Sterling, Colorado
Hayden Thomas Leach	Bennett, Colorado	David VanAkkeren**	Arvada, Colorado
Erik Cameron Lee*	Honolulu, Hawaii	Scott W. Vargas	Colorado Springs, Colorado
Kendra Anne LeMay	Linden, North Carolina	Zachary Luke Walker	Estes Park, Colorado
Gregorio Llorente	Bogota, Colombia	Jordan Thomas Walz*	Rangely, Colorado
Rebeka Danielle Locricchio	Northglenn, Colorado	Zhe Wang	Beijing, China
Garrett Michael Loew***	Liberty, Missouri	Dylan Robert Waugh	Parker, Colorado
Garrett John Luellen	Colorado Springs, Colorado	Adam M. Weaver	Grand Lake, Colorado
Qing Ma	GanSu, China	Calum Andrew Wedgwood	Houston, Texas
Grayson Bracken Malcolm	Broomfield, Colorado	Tyler Jon Wetekamp	Fort Wayne, Indiana
Yue Mao	Wuhan, China	Logan Allen Wilkerson*	Humble, Texas
Leah Colin Marshall**^	Durango, Colorado	Kathryn Elisabeth Wood	Houston, Texas
Courtney Elise Martin	Parker, Colorado	Andrew James Wynes	Cortez, Colorado
Neal Russell Martin	Louisville, Colorado	Gantuya Yanjinsuren	Ulaanbaatar, Mongolia
Christopher Daniel Matthews	Houston, Texas	Daniel Zarrini***^	Parker, Colorado
Yonatan Medhin	Highlands Ranch, Colorado	Yunshuang Zeng	Beijing, China
James Robert Meyer	Seattle, Washington	Fred Yantao Zhu***	Longmont, Colorado
Connor Parks Mills	Brentwood, Tennessee		
Mitchell Wynn Moore	Mount Vernon, Washington		
Brandon Taylor Morey	Houston, Texas		
Nur Amalina Muhammad Abduh*	Kuala Lumpur, Malaysia		
Sarah Kathleen Murphy	Burlington, Wisconsin		
Muhammad Akmal Mustaffa Kamal*	Selangor, Malaysia		
Cory Alexander Nunez**	Saint Simons Island, Georgia		
Nnadozie Maduako Okpara	Saint Louis Park, Minnesota		
Jeffrey Scott Olson*	Durango, Colorado		
Dilan Anthony Orrino	Broomfield, Colorado		
Soo Ho Park	Littleton, Colorado		
Kavish Yagnesh Patel	Parker, Colorado		
Richard Hanson Pitts	Bailey, Colorado		
Amanda Louise Piz	Windsor, Colorado		
Emilee Anne Plezia*	Houston, Texas		
Benjamin Jacob Polzin	Des Moines, Iowa		
Kamilia Husna Putri*	Puri, Indonesia		
Ralph A. Quick III	Golden, Colorado		
Dillon J. Quintana*	San Luis, Colorado		
Eric J. Rademacher	Longmont, Colorado		
Joseph P. Rath	Manchester, England		
Elizabeth Elaine Reale	Orange County, California		
Daniel Mark Reeves	Parker, Colorado		
Alexander G. Restrepo	Albuquerque, New Mexico		
Kendrick Justyn Rhea	Cartersville, Georgia		
Zachary Harrison Richter	San Antonio, Texas		
Trenton Alan Rico	Burlington, Colorado		
Vincent A. Rignol	Bordeaux, France		
Brianna Jo Robinson	Billings, Montana		
Hannah Elizabeth Rossi	Durango, Colorado		
Richard D. Rostad**	Arvada, Colorado		
Evan Ross Sanders	Knoxville, Tennessee		
Austin M. Schlotterbeck	Gibsonia, Pennsylvania		
Luis Miguel Servin Jr.*	Mexico City, Mexico		
Austin Cole Shaffer***	Rose Hill, Kansas		
Joshua D. Shew	Thornton, Colorado		
Charles Lynn Shiverick***	Cleveland, Ohio		

Geophysics Department

Dr. Terence K. Young, Department Head

Bachelor of Science **Geophysical Engineering**

Michael Andrew Blaney**	Houston, Texas
Brandon A. Bolach	Westminster, Colorado
Richmond Lee Brininger	Boise, Idaho
Kylee Kay Brown*	Gillette, Wyoming
Rowland Lee Chen	Concord, Massachusetts
Hank Matthew Cole*	Findlay, Ohio
Thomas Robert Conklin	Glen Ellyn, Illinois
Andrew McKinley Cooper	Cleveland, Ohio
Kira Ann Dickey*	Golden, Colorado
Flannery Cailin Dolan*	Glencoe, Illinois
Stuart Taylor Farris**	Littleton, Colorado
Nicholas Adam Fleegal	Loveland, Colorado
Megan Anne Fuhr	Arvada, Colorado
Dana Lu Gallegos	Arvada, Colorado
Dallas B. Hall	Windsor, Colorado
Joseph Timothy Halloran	Norman, Oklahoma
Vilnis Humejumptewa	Denver, Colorado
Alicia Kathleen Johnson*	Spring, Colorado
Nolan James Leue*	Lakewood, California
Andrew James Markley	Colorado Springs, Colorado
Rowdy J. Mathews*	Wheat Ridge, Colorado
Ryan James Meier	Parker, Colorado
Abigail Rose Michel	Colorado Springs, Colorado
Ginevra Lucille Moore**	Carbondale, Colorado
Samara Melody Omar**	Trinidad and Tobago
Matthew R. Peters	Highlands Ranch, Colorado
Varindra Pradhana	Kuala Lumpur, Malaysia
Aubrey Marie Preble	Golden, Colorado
Steven Baxter Rennolet**	Longmont, Colorado
Joan Marie Sanborn III	Houston, Texas
Michelle Lee Schulze	Houston, Texas

Garrett Frank Sickles*	Norman, Oklahoma
Zachariah P. Simms	Aurora, Colorado
Michael Faughnan Sleevei	Parker, Colorado
Samuel Sterling Smith	Southlake, Texas
Meghan Kristine West	Pagosa Springs, Colorado
Austin Price Williams	Richmond, Texas
Renjie Wu*	Xian, China
Brett Thomas Yarborough	Dallas, Texas

Economics and Business Division

Dr. Michael Walls, Division Director

Bachelor of Science **Economics**

Sean Matthew Coady	Centennial, Colorado
Kownoon Her [^]	Thornton, Colorado
Joshua Timothy Meeks	Lakewood, Colorado

College of Applied Science and Engineering

Dr. Michael J. Kaufman, Dean

George S. Ansell Department of Metallurgical and Materials Engineering

Dr. Ivar Reimanis, Department Head

Bachelor of Science **Metallurgical and Materials Engineering**

Michelle Haruko Akiyama	Lakewood, Colorado
Gabriel Alexander Alcantar-Lopez	Edmond, Oklahoma
Zaid Saoud Alkhalidi**	Jubail, Saudi Arabia
Andrew P. Allen	Henderson, Colorado
Bryant Dylan Behrmann	La Jara, Colorado
Elliot Gatley Britvec***	Grand Junction, Colorado
Charles Henry Carson*	Denver, Colorado
Cory Thomas Cline**	Arvada, Colorado
Charis A. Dallmann**	Westminster, Colorado
Andrew C. Duddy	Anchorage, Alaska
Jonah P. Duerst**	Littleton, Colorado
Conner T. L. Dugan	Conifer, Colorado
Blake James Gleason	Parker, Colorado
Hannah Elizabeth Govett	Midwest City, Oklahoma
Kyle Martin Grove	Manitou Springs, Colorado
Brandon L. Hale	Wichita, Kansas
Andrew Miller Hemesath**	Colorado Springs, Colorado
Tyler M Holroyd	Lakewood, Colorado
Andrew Joesph Hood	Castle Rock, Colorado
Dane Eric Hyer-Peterson***	Evergreen, Colorado
Tyrel L. Jacobsen	Burlington, Colorado
Alexander Lee Janzen	Longmont, Colorado
Jessica L. Lesser	Littleton, Colorado
Patrick Dalton Marshall	Conifer, Colorado
Zachary D. McMullen	Littleton, Colorado
Emily Broussard Mitchell	Arlington, Virginia
Janessa Lee Neumann	Ballard, Utah
Ben Mason Odegard	Helena Montana
Sampson Alec Ramsay	Littleton, Colorado
Michaela Marie Rillings	Conifer, Colorado
David Yaacov Shnaider*	Denver, Colorado
Abby Leigh Smeltzer	Fort Collins, Colorado
Hanna Elizabeth Steadman	Estes Park, Colorado
Rutger Alan Storkamp	Nederland, Colorado
Hairuo Tan***	Nanjing, China
Ryan Z. Taylor	Aurora, Colorado
Austin E. Temples	Seneca, South Carolina
Jake William Wands***	Fort Collins, Colorado
Benjamin Alexander Warren	Radford, Virginia
Nathanael Day Williams	Carson City, Nevada
Conall N. Wisdom*	Kirkland, Washington

Chemical and Biological Engineering Department

Dr. David M. Marr, Department Head

Bachelor of Science **Chemical Engineering**

Chidiebere Kelechi Agwu	Denver, Colorado
Adam Biegert	Arvada, Colorado
Corey Taylor Brugh	Austin, Texas
Melanie Jane Buckles	Westminster, Colorado
William Justin Burckel	Colorado Springs, Colorado
Daniel David Burgoon	Fort Collins, Colorado
Lauren Elyse Cain*	Arvada, Colorado
Victoria Rose Cardoza	Napa, California
Evan Robert Carlson	Longmont, Colorado
Zachary Kenneth Carlson	Colorado Springs, Colorado
Wesley A. Carroll	Eureka, California
David Joseph Castro	Denver, Colorado
Adam D. Cavins	Loveland, Colorado
Jordan Michael Chand*	Aurora, Colorado
Ryan Tadashi Chang*	Bellingham, Washington
James Austin Clements*	Thornton, Colorado
Tessa Janae Cummins**	Brighton, Colorado
Ashley Nicole De Ronde	Pine, Colorado
Adam Joel Deitch*	Summerville, South Carolina
Jason Wesley Dibble**	Lakewood, Colorado
Tia Keilani Eberline	Highlands Ranch, Colorado
Anthony J. Fonte***	Lakewood, Colorado
Susan Kimberly Frazier*	Placerville, California
Nathan Ray Gage	Lake Jackson, Texas
Ryan James Gasvoda**	Los Gatos, California
Zackry Ryan Gertig	Fort Collins, Colorado
Maura Aisling Goede	Westlake, Ohio
Lani Kelia Grantland	Cypress, Texas
Kaitlyn Elise Hillgartner	Lantana, Texas
Mitchell T Hinds*	Thornton, Colorado
Connor Jarrett Hopkins	Tallahassee, Florida
Astin Reid Housley	Warrenton, Virginia
Eric William Husmann	Saint Charles, Missouri
Samuel Elliott Kennedy**	Erie, Colorado
Alyssa Michelle King	Westminster, Colorado
Jordan Steven Kirar	Arvada, Colorado
Hannah M. Kirkeide	Missoula, Montana
Sara R. Kuta	Montrose, Colorado
John O. Law	Iowa City, Iowa
David Dong Ho Lee	Westminster, Colorado
Brandon Charles Lopez*	Pleasanton, California
Jared Joseph Mannatt	Longmont, Colorado
Sean Nathaniel McCullum	Highlands Ranch, Colorado
Lauren Vanessa Melching**	Houston, Texas
Hailey Louise Meyer	Saint Cloud, Minnesota
Zachary S. Moeller**	Littleton, Colorado
Kyle Thomas Moore	Arvada, Colorado
Eamonn Conor Murphy	Colorado Springs, Colorado
Jalene Jo Novotny	Arvada, Colorado
Cullen Robert O'Connor	Aurora, Colorado
Lucille Agosta Orsi	Wichita, Kansas
Andrew Michael Pearsall**	Spring, Texas
Ethan Daniel Pearson	Livermore, Colorado
Alokya Prashanthi Perera*	Olympia, Washington
Alexander Perli	Katy, Texas
Henry David Pettine	Fort Collins, Colorado
Madison Catherine Post	Colorado Springs, Colorado
Benjamin E. Prewitt	Sugar Land, Texas
Noah Jeremy Quintana	Pueblo, Colorado
Sydney Cadence Rajchel	Arvada, Colorado
Justin Thomas Roach	Parker, Colorado
Sydney Elizabeth Rogers	Colorado Springs, Colorado
Hannah Reba Rosenberg	Union, Kentucky
Garrett Lyle Ruess	Corunna, Michigan
Diane Salmon*	Kiowa, Colorado
Tyler A. Sand	Arvada, Colorado
Brittany Ann Schreiner***	Englewood, Colorado

Kathryn Jean Sciamanna*** Orinda, California
 Steven Dean Simpson Littleton, Colorado
 Evyn Howard Sprenkel Centennial, Colorado
 Kaitlin Fay Sweeney** Arvada, Colorado
 Jacob Turner Lakewood, Colorado
 Rachael Allyson Turner Spring, Texas
 Philip Sappington Walker*** Westminster, Colorado

Bachelor of Science **Chemical and Biological Engineering**

Keira L. Bell Broomfield, Colorado
 Hannah Elizabeth Blum Golden, Colorado
 Stephen Joseph Dewhurst Denver, Colorado
 Corrine Sy Din* Centennial, Colorado
 Andoni Carson Eck Boise, Idaho
 Alexaundria E. Engleby Lakewood, Colorado
 Tyler Anthony Finamore* Lakewood, Colorado
 Raina Nicole French Huntsville, Alabama
 Stevin N Garcia Parker, Colorado
 Samantha Nadine Garton Littleton, Colorado
 Angela J. Gift Seabeck, Washington
 Jesse Glover Wheat Ridge, Colorado
 Laken Marie Hartman Lafayette, Louisiana
 Sean Michael Hoeft** Highlands Ranch, Colorado
 Alejandra Holifield Arequipa, Peru
 Harley Joseph Ihrig Golden, Colorado
 Alexandria Kristin Kayl Northglenn, Colorado
 Jacqueline M. Klecka Eagle River, Alaska
 Nathan Rex McAdams Erie, Colorado
 Joshua Micheal McCulloch Lakewood, Colorado
 Jake Paul Newsom* Midland, Texas
 Karen L. O'Brien Westcliffe, Colorado
 Ryan Michael Orr Colorado Springs, Colorado
 Benjamin James Petrie Aurora, Colorado
 Jessica Veronica Rivera Centennial, Colorado
 Austin Taylor Roberts Fairbanks, Alaska
 Ryan D. Rue Columbus, Michigan
 Connor William Rust Lakewood, Colorado
 Georgia Kamper Salisbury* Fort Collins, Colorado
 Maximilian Josef Sanktjohanser Arvada, Colorado
 Molly K. Secora* Morrison, Colorado
 Bethany Leigh Simonson*** Casper, Wyoming
 Whitney Elaine Sinclair* Dallas, Texas
 Sarin A Smith Denver, Colorado
 Shelby Kay Smith Thornton, Colorado
 Simona Mara Smith Golden, Colorado
 Rita Elizabeth Stauter* Greeley, Colorado
 Julian Johnny Uy Jr. Monument, Colorado
 Courtney R. Widhalm* Yakima, Washington
 Zainab Zullali** Thornton, Colorado

Chemistry Department

Dr. David T. Wu, Department Head

Bachelor of Science **Chemistry**

Timothy C. Ashurst Delta, Colorado
 Corinne Elise Beck Centennial, Colorado
 Nathan Patrick Bessen Centennial, Colorado
 Alexander Dusky Burton Moab, Utah
 Andre C. Devorss Evergreen, Colorado
 Kimberly Rose Drajem Arvada, Colorado
 Leah Michelle Froehle* Centennial, Colorado
 Karlie Alyce Gandee Sterling, Colorado
 Katie R. Gann* Golden, Colorado
 Matthew Stephen Jaszai Alamogordo, New Mexico
 Kyle Thompson Kluherz** Loveland, Colorado
 Orlando E. Martinez* Castle Pines, Colorado
 Aaron V. Mull^ Milliken, Colorado
 Vincent Evan Pane** Longmont, Colorado
 Frances Rose Richardson* Centennial, Colorado
 Hannah M. Rose* Berkley, Michigan
 Eric Allen Sears Colorado Springs, Colorado
 Patrick Wayne Skelly*** Albuquerque, New Mexico

Samantha Allison Smith Golden, Colorado
 John Lawrence Stuntz Littleton, Colorado
 Stephanie Hong Thanh To Thornton, Colorado
 Austin Kyle White Centennial, Colorado
 Mckenzie Elizabeth Zeman Wheat Ridge, Colorado

Physics Department

Dr. Jeff Squier, Department Head

Bachelor of Science **Engineering Physics**

Dylan Robert Bartusiak Arvada, Colorado
 Ryan D. Beethe** Windsor, Colorado
 Matthew Daniel Berntson** Minneapolis, Minnesota
 Libby Kristine Booton Westminster, Colorado
 Alexander Michael Briggs Colorado Springs, Colorado
 Travis Jerome Canney Barrington, New Hampshire
 Eric Jacob Charney** Denver, Colorado
 Ty Michael Coleman** Longmont, Colorado
 Sam Wayne Mikle Cooper Cypress, Texas
 Shannon Alycia Craig* Conifer, Colorado
 Tyler J Croteau Windsor, Colorado
 John Paul Czerski Anchorage, Alaska
 Jordan Wesley Diemer Windsor, Colorado
 Cody James Doyle Delta, Colorado
 Daniel Michael Dubuisson Lakewood, Colorado
 Sarah Jane Dunn Lakewood, Colorado
 Daniel Paul Dupuis** Westminster, Colorado
 Galen Mansor Elisha Arvada, Colorado
 Michael McCarthy Eustis* Weare, New Hampshire
 Markus A. Garbiso* Pagosa Springs, Colorado
 Henry G. Gotjen Intervale, New Hampshire
 Joseph Young Haines* McKinney, Texas
 Traver I. Hamilton Golden, Colorado
 Derek J. Hart** Highlands Ranch, Colorado
 Leah Lauren Hill Centennial, Colorado
 Gunnar Timothy Hogle* Colorado Springs, Colorado
 Gregory Warren Jenkins** Mead, Colorado
 Garrick Jay Johnson* Reno, Nevada
 Benjamin Daniel Kostreva Centennial, Colorado
 Matthew Allen Lovely Golden, Colorado
 Lam Hai Mach* Ho Chi Minh City, Vietnam
 William Richard Magrogan III* Highlands Ranch, Colorado
 Francesca Victoria Mallett Pearland, Texas
 Michael Matthew McNulty Boulder, Colorado
 Mark A. Mendez Thornton, Colorado
 Evan Rafael Mendoza Lakewood, Colorado
 Travis J. Miller Littleton, Colorado
 Brock Anthony Morrison Lawrence, Kansas
 Jacob Asher Neumann** Aurora, Colorado
 Monika K. Osborn Arvada, Colorado
 Andre Elias Pacheco Sedalia, Colorado
 Michael Alexander Person Arlington, Virginia
 Carl T. Peterson Beaverton, Oregon
 Scott Lucas Rauenhorst Olivia, Minnesota
 Samuel James Reiter* Plano, Texas
 Daniel James Rosen*** Colorado Springs, Colorado
 Daniel Ervin Schemmel*** Colorado Springs, Colorado
 Raymond Andrew Bocog Simmons Lutz, Florida
 Brandon Joshua Skogen Centennial, Colorado
 Conrad Bull Smith Anthem, Arizona
 Taylor Marie Smith San Antonio, Texas
 Noah M. Towe Martin, Tennessee
 Welton Roger Whitley IV Cypress, Texas

College of Engineering and Computational Sciences

Dr. Kevin L. Moore, Dean

Applied Mathematics and Statistics Department

Dr. Willy A. Hereman, Department Head

Bachelor of Science **Applied Mathematics and Statistics**

Michael L. Brown**	Colorado Springs, Colorado
Colton James Bryant**	Gunnison, Colorado
William Bannon Byrd*	Christiansted, Virgin Islands
Chelsae M. Cameron**	Sacramento, California
Taylor Kathryn Chott*	Sedalia, Colorado
Kristina Marie Gately	Westminster, Colorado
Shawn J. Johnson**	Colorado Springs, Colorado
Victoria Katharine Kay^	Hollister, California
Madison Renee Kellar*	Federal Way, Washington
Alyssa Victoria Mandarino	Falcon, Colorado
Shannon M. Mc Govern	Suttons Bay, Michigan
Robert Anthony McKnight Jr.	Highlands Ranch, Colorado
Michael David Mehrtens*	Littleton, Colorado
Sujee Rachel Park	Wheat Ridge, Colorado
Edward Seabury Prentice	Colorado Springs, Colorado
Brandon Cruz Reyes	Sterling, Colorado
Kerrek Hatfield Stinson	Cody, Wyoming
Trace Nely Tomenchok*	Littleton, Colorado
John Paul Wakefield***	Colorado Springs, Colorado

Bachelor of Science **Mathematical and Computer Science**

Kownoon Her^	Thornton, Colorado
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Civil and Environmental Engineering Department

Dr. John E. McCray, Department Head

Bachelor of Science **Civil Engineering**

Nohemi Almaraz*	Denver, Colorado
Heather Ann Barnes	Satellite Beach, Florida
Scott Arthur Brennan	Grand Junction, Colorado
Zineb Elmkanter	Lakewood, Colorado
Robert Kyle Flanegin***	Colorado Springs, Colorado
David Alan Gabrielson	Franktown, Colorado
Chad Walker George	Gunnison, Colorado
Katlyn Mariah Gresty	Littleton, Colorado
Jordan Andrew Hasz	Arvada, Colorado
Hannah Leigh Heberd	Golden, Colorado
Dena M. Hout	Mission Viejo, California
Danielle Kendra Johnson-Hazlewood	Cypress, Texas
Steven J. Kordziel	Golden, Colorado
Ryan William Lanham*	Naperville, Illinois
Austin Curtis Lightle*	Longview, Texas
Jessica Diana Matthews	Craig, Colorado
Collins G. Moore	Centennial, Colorado
Matthew J. Olsson*	Lincoln, Nebraska
Riley Rebecca Puckett	Erie, Colorado
Shae Lynn Quigley***	Houston, Texas
Trevor Thomas Ritchie	Portland, Oregon
Daniel Alan Rowe	Doylestown, Pennsylvania
Albert Joseph Schillinger III	Paradise Valley, Arizona
Allison Christine Thomas	Golden, Colorado
Joseph Christopher Verissimo***	Franktown, Colorado
Trevor Christian Wages	Littleton, Colorado
Bradley J. Wood	Denver, Colorado

Bachelor of Science **Engineering**

Environmental Specialty

Lukas Wilds Newbury	Carbondale, Colorado
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Bachelor of Science **Environmental Engineering**

Audra Leigh Agajanian	Longmont, Colorado
Jessica Nicole Allen	Arvada, Colorado
Isaac Lynn Avila**	Newport News, Virginia
Michelle Lynn Bonfanti	Castle Rock, Colorado
Graham Gene Cottle	Decatur, Illinois
Kara Marie Davis*	Boulder, Colorado
Brenna Marie Eads	Longmont, Colorado
Dalton Robert Ellis	Morrison, Colorado
Emma Ely**	Bedford, Texas
Sarah Jordan Fischer	Littleton, Colorado
Rosa I. Foth	Frisco, Colorado
Xiaojuan Guo	Gueng Zhou, China
Roderick James Harger	Windsor, Colorado
Cameron Martin Colley Holck	Pflugerville, Texas
Sarah Catherine Hurley	Highlands Ranch, Colorado
Caroline Harper Ike	Stanford, Connecticut
Marisa Anne LaRouche	Greenwood Village, Colorado
Laura Teresa Leonard**	Arvada, Colorado
Clara Isabel Levy*	Berthoud, Colorado
Laila Maksud	Karaganda, Kazakhstan
Christopher Alan Marks**	Burnsville, Minnesota
Melissa K. Mitton*	Ramona, California
Kathryn Blair Newhart*	Missoula, Montana
Jordan Lindsey Partin	Conroe, Texas
Megan Elizabeth Peterson	Saint Louis, Missouri
Diane Marie Roher*	State College, Pennsylvania
Haley Marie Salzwedel	Louisville, Colorado
Richard Lindsay Sebastian-Coleman*	Unionville, Connecticut
Christopher Allan Waechter	Delores, Colorado
Curtis James Weller*	Arvada, Colorado
Logan Shigeru Lung Yamamoto**	Honolulu, Hawaii
Jessica Marie Zielinski	Parker, Colorado

Electrical Engineering and Computer Science Department

Dr. Atef Elsherbeni, Department Head

Bachelor of Science **Computer Science**

Jacob Keith Adelgren	Grand Junction, Colorado
Jeremy Scott Alvis	Highlands Ranch, Colorado
Carathryn Kay Beutel	Aurora, Colorado
Christopher Sydney Butler	Littleton, Colorado
Kevin Clark Carbaugh	Colorado Springs, Colorado
Griffin James Ciluffo	Lakewood, Colorado
Allison S. Crouch	Missouri City, Texas
James Dang	Fort Collins, Colorado
Kevin D. Day	Katy, Texas
Taylan Wade Dillion	Hasty, Colorado
Kyle Bernard Dymowski	Westminster, Colorado
Jacob Daniel Emmel***	Colorado Springs, Colorado
Maxwell Miller Eshleman****^	Littleton, Colorado
Justin G. Frazer	Lakewood, Colorado
David M. Grisham	Pueblo, Colorado
Stephen Alan Hamrick	Canon City, Colorado
William M. Harvey**	Aurora, Colorado
Nathaniel Parker Jacobi	Las Vegas, Nevada
Jennifer A Jacobs**	Bremerton, Washington
Christopher Travis Johnson*	Houston, Texas
Austin James Kauffman	Littleton, Colorado
Victoria Katharine Kay^	Centennial, Colorado
Martin E. Kuchta**	Golden, Colorado
Zheng Li	Xinxiang, China
Carter Aaron Mann	Fort Collins, Colorado
Leah Colin Marshall***	Durango, Colorado
Nicholas J. Masching**	Colorado Springs, Colorado

Gokul Ganesh Natesan**	Santa Clara, California
Remington Winter-Yballa Norris	Denver, Colorado
Alexander S. Patel	Thornton, Colorado
Ryan M. Porter*	Castle Rock, Colorado
Christopher Aaron Rice^	Del Norte, Colorado
Espen Mejlvang Roth	Superior, Colorado
Eric Wade Sheeder**	
Ryan Alexander Shipp	Colorado Springs, Colorado
Johanna Margaret Smith	Austin, Texas
Colton Andrew Thomas	Littleton, Colorado
Corey Alexander Tokunaga-Reichert	Windsor, Colorado
Bernardo Velloso Trindade	Highlands Ranch, Colorado
Taylor Chase Tyree	Colorado Springs, Colorado
Isaac Jose Valdez II	Wheat Ridge, Colorado
Zachary T. Webb**	Boerne, Texas
Jon A. Weldon Jr.	Round Rock, Texas
Chase Ray West	Littleton, Colorado
Daniel Zarrini**^	Parker, Colorado

Bachelor of Science **Electrical Engineering**

Kyle L. Alexander	Peyton, Colorado
Max L. Bubar*	Redmond, Washington
Steven Glenn Dear	Thornton, Colorado
Michael Keaghan Economon	Springfield, Missouri
Maxwell Miller Eshleman***^	Littleton, Colorado
Elizabeth Marie Frank	Littleton, Colorado
Andrew J. French	Anchorage, Alaska
Richard Vladimir Garvey**	Portmore, Jamaica
Jacob Lynn Glanzer	San Antonio, Texas
Brandon Jon Gong***	Littleton, Colorado
Alicia N. Helmer	Mancos, Colorado
Jacob Aldo Hollister*	Woodinville, Washington
Jonathan Simon Hong	Aurora, Colorado
Kyle Patton Kaminky**	Parker, Colorado
William John Kelly*	Fort Collins, Colorado
Holly Mae Krebs	Loveland, Colorado
Joel David Kuenning	Lakewood, Colorado
Trevor Grant Lager	Aurora, Colorado
Tommy Li	Lakewood, Colorado
David Cameron Long**^	Golden, Colorado
Alex O. Manoilo	Aurora, Colorado
James Cornelius Maroney	Evergreen, Colorado
Courtney Joy Mort	Riverside, California
Kyle T. Patel	Lakewood, Colorado
Ryan Joseph Patton***	Eagle, Idaho
Jordan Alexandra Pontillo*	Centennial, Colorado
Christopher Aaron Rice^	Del Norte, Colorado
Alec J. Richey	Boise, Idaho
Rodney Bradford Roberts III	Solvang, California
Frederick Thomas Rodgers III	Littleton, Colorado
Nathan Daniel Stanley**	Park City, Utah
Evan Blake Stoelzel	Midland, Texas
Ian C. Tidd	Fort Collins, Colorado
Timothy Alan Tribby Jr.	Parker, Colorado
Richard Lawrence Uhrig	Parker, Colorado
Ryan David Wareham**	Golden, Colorado
Emma Rose Watson	Crosby, Texas
Zachary T. Wood	Colorado Springs, Colorado
Nathan Walter Young****^	Danville, California
Jinbo Zhu	Kaifeng, China

Bachelor of Science **Engineering**

Electrical Specialty

Eugene Vincente Duran Jr.	Rifle, Colorado
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Mechanical Engineering Department

Dr. Gregory Jackson, Department Head

Bachelor of Science **Engineering**

Mechanical Specialty

Tyler Dean Cypher	Conifer, Colorado
Andrew Laurence Duty	Evergreen, Colorado
Andrew D. Grossnickle	Fort Collins, Colorado
Jonathan Chi Tran	Westminster, Colorado

Bachelor of Science **Mechanical Engineering**

Syamil Amri Abdul Malek	Kajang, Malaysia
Arjumand Alvi	Katy, Texas
Thor Erik Andreassen**	Highlands Ranch, Colorado
Martin R. Andrie	Aurora, Colorado
Jesse Templeton Arnold**	Buena Vista, Colorado
Elias James Baier	Delta, Colorado
Alexander William Bainbridge	Golden, Colorado
Nicholas Philipp Baumgartner*	Lakewood, Colorado
Matthew Lealton Benett	Peyton, Colorado
Jack Gregory Bevan	Walnut Creek, California
Shannon M. Bradley	Broomfield, Colorado
Matthew Bryan Brandt**	Arvada, Colorado
Thomas J. Buckholtz	Aurora, Colorado
Dylan Robert Bull	Highlands Ranch, Colorado
Karen E. Burke	Arvada, Colorado
Brandon Scott Burns	Pueblo, Colorado
Benjamin M. Bymaster	Wheat Ridge, Colorado
Daniel Thomas Campbell	Wibaux, Montana
Joseph Michael Carattini	Edmonton, Alberta
Forrest Quentin Carr	Fort Collins, Colorado
Samuel Lawrence Chambers	Johnstown, Colorado
Lucas Slayton Christian	Townsend, Georgia
Sydney Alexis Clark***	Midland, Texas
Travis William Clark	Salida, Colorado
Ryan Lockwood Clingan	Houston, Texas
Spencer Keith Connor**	Boulder, Colorado
Joshua Luke Coors**	Evergreen, Colorado
Anna C. Corman	Arvada, Colorado
Frances Alexandra Hunter Cormier	San Diego, California
Michael D. Cothard IV	Hinsdale, Illinois
Caleb Alexander Courkamp**	Parker, Colorado
Jordan Forest Daubenspeck	Parker, Colorado
Damian James David	Broomfield, Colorado
Justin P. Dearden	Colorado Springs, Colorado
Clare Howell Decker*	Katy, Texas
Sarah Kathryn Dewar	West Lake, Ohio
Courtney Nicole Dietsche	Long Valley, New Jersey
Garrett William Dietz	Colorado Springs, Colorado
Conor David Doyle	Groton, Connecticut
Elise M. Dugwyler	Longmont, Colorado
Kyle Ashton Duran	Morrison, Colorado
Justin Stephen Fantasky***	Littleton, Colorado
Tyler Lindo Faoro	Penrose, Colorado
Seth Adam Farmer	Florence, Colorado
Nicholas S. Fawcett	Littleton, Colorado
Creed Taylor Flynn*	College Station, Texas
Paul A. Foreman	Littleton, Colorado
Jonathan Paul Forristall	Glenwood Springs, Colorado
Tyrell Lee Frame	Spencer, West Virginia
Logan Alice Fulton	Arvada, Colorado
Sean E. Garneau	Superior, Colorado
Eric David Garza**^	Littleton, Colorado
Audrey Meredith Gerhart	Denver, Colorado
Drew W. Gillan	Golden, Colorado
Mackenzie Williams Golden	Littleton, Colorado
Isabel Goni-McAteer***	Corvallis, Oregon
Emmanuel C. Graves	San Antonio, Texas
David Harland Grimmer	Houston, Texas
Sean Christopher Guidi**	Las Cruces, New Mexico
Michael David Harrison	Fort Collins, Colorado
Matthew Michael Hart	Colorado Springs, Colorado

Kevin Scott Hartmann*	Glenwood Springs, Colorado	Monica Clemencia Padeway	Colorado Springs, Colorado
Jared Scott Herselman	Kyle, Texas	Tyler Scott Parker	Aurora, Colorado
Robert David Drapeau Hodge**	Georgetown, Colorado	Lucas Daniel Pedersen	Colorado Springs, Colorado
Garrett Arthur Hoffman	Aurora, Colorado	Dominic A. Pena	Golden, Colorado
Nathan James Hoffmann	Brighton, Colorado	Zane T. Perez	Norton, Kansas
Brittany N. Holloway	Frederick, Colorado	Joshua Michael Phillips	Monte Vista, Colorado
Christopher Michael Hollwedel	Grapevine, Texas	Philip Anthony Platt Jr.	Colorado Springs, Colorado
John Charles Hood*	Parker, Colorado	Jonathan F. Pless	Littleton, Colorado
Trey Vincent Hulbert**	Aurora, Colorado	Kira Elizabeth Powell	Odessa, Washington
Alexis Ramsey Humann***	Loveland, Colorado	Michelle Elizabeth Preston***	Arvada, Colorado
Leah Christine Jaron**	Colorado Springs, Colorado	Nadim Rabbani	Houston, Texas
Zachary Scott Jewell**	Nederland, Colorado	Daniel Joseph Reinhardt	Gunnison, Colorado
Deirdre Elizabeth Johnson**	Albu, New Mexico	Nicholas Raymond Rentz	Brighton, Colorado
Christopher Branden Kale	Buena Vista, Colorado	Christopher Alexander Reynolds	Bailey, Colorado
Masud Shahriyar Karim^^	Golden, Colorado	Sierra Rene Richards	Parker, Colorado
Michael Budiono Karman**	Superior, Colorado	Nathan K. Rust	Littleton, Colorado
Jordan Paul Kincaid-Smith	Lakewood, Colorado	Stephen Andrew Sabo***	Poway, California
Hillary Ann Knaebel*	The Woodlands, Texas	Austin Michael Sagel	Westminster, Colorado
Logan Wilson Knowles	Meridian, Idaho	Jacqueline Xaviera Salindeho	Golden, Colorado
Suchot Kongsomboonvech**	Aurora, Colorado	Steven A. Sandoval***	La Junta, Colorado
Jayden Taylor Robert Kulhawy	Calgary, Canada	David Joseph Schack**	The Woodlands, Texas
Brandon Michael Lalonde***	Longmont, Colorado	Katy Anna Schneider**	Durango, Colorado
Daniel Gervacio Lamas	Arvada, Colorado	Daniel Guan Shang***	State College, Pennsylvania
James Mikel Lewis	Grand Junction, Colorado	Stephen John Shinol	Sugar Land, Texas
Andrew Michael Liebing*	Palmer, Alaska	Jacob William Singleton	Bakersfield, California
Morgan L. Lindsey	The Woodlands, Texas	Matthew Andrew Sisson	Medina, Ohio
Warren Edward Lockwood	Conifer, Colorado	Brandon Lee Fisher Smith**	Salida, Colorado
Paige Sarah Lonergan	Tulsa, Oklahoma	Alyssa Michelle Spomer***	Fort Collins, Colorado
David Cameron Long***^	Golden, Colorado	Marcelle Reah Sprackling	Golden, Colorado
Christopher Paul Looney	Lakewood, Colorado	Holden Michel Steppan*	Littleton, Colorado
Dwain Lotter	Golden, Colorado	Dillon G. Stine	Fort Collins, Colorado
Garrett James MacInnis	Healdsburg, California	Yegor Andriyovych Svetlakov	Monument, Colorado
Ryan Joseph Maidhof***	Broomfield, Colorado	Ian Alec Robert Tappan***	Morrison, Colorado
William Dean Martin	Westminster, Colorado	Jacob Andrew Thomas**	Spring, Texas
Shane Everett Mathias	Aurora, Colorado	John William Thompson	Lakewood, Colorado
Alexander Steven Mati	Longmont, Colorado	Kaitlyn Shirley Tripp	Golden, Colorado
Brennan C. Mayhak	Arvada, Colorado	John Scott Vaille	Garden Ridge, Texas
Jodi Lynn Mayhak	Catonsville, Maryland	Martin Vincentelli**	Caracas, Venezuela
Mitchell D McCarty***	Colorado Springs, Colorado	Andrew Joseph Vujcevic	Colorado Springs, Colorado
Kylen Kearns McClintock	Boulder, Colorado	Steven Andrew Wehr	Chugiak, Alaska
Sean Patrick McGinley*	Reno, Nevada	Eric Matthew Weiss	Greeley, Colorado
Joshua Reuben Mesward	Colorado Springs, Colorado	Kaleb Nathan Weston	Olathe, Kansas
Joseph Francis Meyer**	Westford, Massachusetts	Christian Maurice Whyne	Parker, Colorado
Jeremy Michael Meyers	Auburn, Nebraska	Isaac D. Wilkie	Morro Bay, California
Ann Joyce Miller**	Bartlesville, Oklahoma	Nelson Wyman Calvin Winbush III	Jacksonville, Florida
James Moreland Mirabassi	Erie, Colorado	Quinn Matthew Wolf***	Plano, Texas
Deanna Kela Mitchell	Littleton, Colorado	Emily Edith Wong	Lake Oswego, Oregon
Joshua David Mondy	Colorado Springs, Colorado	Nathan Walter Young***^	Danville, California
Andre Raul Montes***	Castle Rock, Colorado	Nicholas Nathan Yuan*	Houston, Texas
Keenan James Murphy**	Colorado Springs, Colorado	Nicholas Michael Zadow	Aurora, Colorado
Frank Worthington Musick	Buena Vista, Colorado		
Lucas Andrew Neff	Fort Collins, Colorado		
Nathan Daniel Nicholas*	Elizabeth, Colorado		
John Michael Oberholtzer	Stewartville, Minnesota		
Gina Eliza Ogg	Superior, Colorado		
Patrick Douglas Ogilvie***	Tulsa, Oklahoma		
Wyatt James Olea	Boulder, Colorado		
Nathan J. Olinger*	Westminster, Colorado		
Jacob Earl Ost	Gunnison, Colorado		

SENIOR AWARDS

The Robert A. Baxter Award

Presented for meritorious work in chemistry.
Vincent Pane

Charles N. Bell, 1906, Award

Provided for by Mr. Bell, is a Brunton transit, awarded in mining for completing the course in mining with the most progress in school work during the entire period for which the course is given.

Tom Hirsh

The Honorable D. W. Brunton Award

Provided for by Mr. Brunton, is awarded for meritorious work in mining.

Joe Waite

The Brunton Award in Geology

Awarded in recognition of the highest scholastic achievement and interest in and enthusiasm for the science of geology.

David Boyd

The Clark B. Carpenter Award

Presented to the graduating senior in mining or metallurgy who, in the opinion of the seniors in mining and metallurgy and the professors in charge of the respective departments, is the most deserving of this award.

Don Ross
Hairuo Tan

The Mary & Charles Cavanaugh Award

Presented in metallurgy, is determined by scholarship, professional activity and participation in school activities.

Jake Wands

The Colorado Engineering Council Awards

Presented for excellence in scholarship, high integrity, and general engineering ability.

Alexis Humann
Kathryn Sciamanna
Levi Rawlings

The Distinguished Military Graduate Award

Designated by the ROTC professor of military science for graduating seniors who possess outstanding qualities of leadership and high moral character, and who have exhibited a definite aptitude for and interest in military service.

Julian Joseph Uy

Dwight D. "Ike" Eisenhower Award

Provided for by Mr. and Mrs. R.B. Ike Downing, \$150 and a plaque is awarded to the outstanding ROTC Cadet commissioned each year based on demonstrated exemplary leadership within the Corps of Cadets, and academic excellence in Military Science.

Julian Joseph Uy

The Professor Everett Award

Provided for by Frank Ausanka, '42, in honor of James R. Everett, an outstanding former faculty member in mathematics at CSM, is presented to a graduating senior in Mathematics who demonstrates scholarship, leadership, community service, and the potential for the innovative application of mathematics to mineral engineering.

Jake Wakefield

The Cecil H. Green Award

Given to the graduating senior in geophysical engineering who, in the opinion of the department of geophysics, has the highest attainment in the combination of scholastic achievement, personality, and integrity.

Stuart Farris

The Neal J. Harr Memorial Outstanding Student Award

Provided by the Rocky Mountain Association of Geologists, is presented in geology for scholastic excellence in the study of geology with the aim of encouraging future endeavors in the earth sciences.

Jenny Wolicki

The Harrison L. Hays, 1931, Award

Presented in chemical and petroleum refining for demonstrating by scholarship, personality and integrity of character, the general potentialities of a successful industrial career.

Philip Walker

The H. L. Hazen Prize in Process Metallurgy

Presented to the graduating senior who shows exceptional potential for a career in process metallurgy based upon demonstrated interest, academic achievement and extracurricular activities.

Tyrel Jacobsen

The John C. Hollister Award

Presented to the most deserving student in geophysics and is not based solely on academic performance.

Joan Sanborn

The Robert M. Hutchinson Award

Awarded to the outstanding student from geology field camp who did the best mapping.

Aimee Anderson
Victoria Zahourek

The Henry W. Kaanta, 1915, Award

Presented for the outstanding paper on a laboratory procedure or experimental process written by a graduating senior majoring in extractive metallurgy or mineral processing.

Elliot Britvec

The Maryanna Bell Kafadar Award

Presented to the graduating senior who has excelled in humanities courses and humanities-related activities.

Richard Sebastian-Coleman

The Guy T. McBride Jr. Honors Program in Public Affairs for Engineers Award

Presented to a senior in the McBride Program whose scholarship, character and personality best exemplify the ideals of the program as determined by the committee of tutors.

Clara Levy
Courtney Widhalm

The McIver - Metallurgical and Materials Engineering Faculty Award

Presented from time to time by the faculty of the department to the graduating senior who, by participation in and contribution to campus life and by academic achievement, has demonstrated those characteristics of a well-rounded graduate that Mines aspires to develop in its students.

Hannah Govett

The George T. Merideth Award

Established in 2012 by Keith A. '52 and Mary Ann Kvenvolden, to carry forward the legacy of former Mines geophysics professor George T. Merideth, is presented to outstanding graduating geophysics students who have demonstrated academic excellence, community involvement and potential for leadership in earth science engineering.

Samara Omar

The Old Timers' Club Award

Presented to the graduating senior who, in the opinion of the department of mining engineering, has shown high academic standing in coal mining engineering and potential for the coal industry.

Levi Rawlings

The Outstanding Chemistry Service Award

Presented to the graduating senior who, in the opinion of the department of mining engineering, has shown high academic standing in coal mining engineering and potential for the coal industry.

Orlando Martinez

The Outstanding Graduating Senior Award

May be presented by each degree-granting department to its outstanding graduating senior.

Mining Engineering

Kevin Moran

Geology and Geological Engineering

Carolyn Pauly

Petroleum Engineering

Jeffrey Olson

Geophysics

Ginevra Moore

Economics & Business

Kownoon Her

Metallurgical and Materials Engineering

Elliot Britvec

Chemical and Biological Engineering

Bethany Simonson

Brittany Schreiner

Chemistry and Geochemistry

Patrick Skelly

Physics

Daniel Schemmel

Applied Mathematics and Statistics

Taylor Chott

Computational & Applied Mathematics

John Wakefield

Civil and Environmental Engineering

Shae Quigley

Emma Ely

Electrical Engineering and Computer Sciences

Nathan Young

Max Eshleman

Mechanical Engineering

Isabel Goni-McAteer

Undergraduate Award

Presented to the International Student who has demonstrated Scholastic Achievement. Her academic achievements are even more impressive due to the fact that English is not her native language.

Chayapod Beokhaimook

The Outstanding Senior Research Award

Awarded to a chemistry student who demonstrates superior performance and creativity in undergraduate research.

Kyle Kluherz

The Outstanding Student Service Award

Presented by the Division of Student Life to the student/s who, during their tenure at Colorado School of Mines, outside and above their academic role, vigorously participated in activities or projects for the greater benefit of their peers and community to promote excellence and well-being.

Samara Omar

Joe Haines

The Thomas Philipose Outstanding Senior Award

Awarded to the senior in the Guy T. McBride Jr. Honors Program in Public Affairs for Engineers whose intellectual development, scholarship, leadership and character best exemplify the ideal of the Program.

Robert Kyle Flanegin

The Physics Faculty Distinguished Graduate Award

Presented from time to time by the faculty of the department to graduating engineering physics seniors with exceptionally high academic achievement in physics.

Daniel Rosen

Derek Hart

The George R. Pickett Memorial Award

Presented on the basis of demonstrated interests and accomplishments in the study of borehole geophysics.

Dana Gallegos

The President's Senior Scholar Athlete Award

Presented to one graduating female and male athlete with a cumulative grade point average of 3.0 or higher, has lettered in a sport during their senior year, and who has demonstrated leadership qualities of an exemplary student-athlete.

Ann Miller

Gokul Natesan

The Phillip R. Romig Award

Presented to the graduate who best exemplifies excellence in the acquisition of field geophysical observations.

Michael (Andrew) Blaney

The Arthur B. Sacks Award for Excellence in Environmental Sustainability

Recognizes graduate or undergraduate students who have excelled in studying and raising awareness of environmental sustainability.

Robert Kyle Flanegin

The Ryan Sayers Memorial Award

Recognizes the outstanding academic achievements of a graduating student, majoring in engineering physics and/or mathematical and computer sciences, who has performed significant undergraduate research.

Kerrek Stinson

The Selim Memorial Scholarship

Presented by the faculty of the department of chemical engineering to a graduating student who promises great success in graduate school.

Ryan Gasvoda

Kathryn Sciamanna

The William D. Waltman, 1899, Award

Provided for by Mr. Waltman, is presented to the graduating senior whose conduct and scholarship have been most nearly perfect and who has most nearly approached the recognized characteristics of an American gentleman and/or lady during the recipient's entire collegiate career.

Leah Jaron

The H. G. Washburn Award

Presented in mining for good scholastic record and active participation in athletics.

Nicole Demontigny

School of Mines Senior Class Gift is a long standing tradition recognizing the numerous seniors who actively participated in acquiring contributions for the Senior Class Gift to the Colorado School of Mines. Thank you, Class of 2016, for partaking in this tradition of giving back to the institution. Your munificence makes a lasting difference for future Mines students and further advances the School's long history of excellence.

ACADEMIC HONORS, SCHOLARS, AND HONOR SOCIETIES

Mines awards the academic honors designations of summa cum laude, magna cum laude, and cum laude. The honor cords worn by students earning the highest designation, summa cum laude, are royal blue and orange. Magna cum laude is represented by light blue and orange. Cum laude is represented by silver and orange. Honor cords and stoles are also worn to signify involvement in honor societies, scholars programs, and recognition of international students.

Scholars and Special Programs

Many Mines students benefit from scholarships provided by our generous alumni and friends. The Harvey and Boettcher Scholars programs provide full tuition for four-years.

Harvey Scholars

Corrine Din
Robert Flanegin
Katie Gann
Deirdre Johnson
Hailey Meyer
Lucille Orsi
Jordan Partin
Steven Sandoval
Logan Yamamoto

Boettcher Scholars

Kevin Hartmann
Marisa LaRouche
Brandon Smith

McBride Honors Program

The Guy T. McBride Honors Program in Public Affairs allows students to explore the interfaces between their areas of technical expertise and the humanities and social sciences resulting in a minor in public affairs with the honors distinction.

Nor Aiman Khalidah
Ahmad Tarmizi
Molly Baron
Ashley Burk
Joshua Coors
Tessa Cummins
Emma Ely
Robert Flanegin
Creed Flynn
Clara Levy
Sean McGinley
Michelle Preston
Brianna Robinson
Joan Sanborn
Richard Sebastian-Coleman
Alyssa Spomer

Blue Key Honor Society

Recognizes students for balanced all-around excellence in scholarship, leadership and service.

Adam Ahnhut
Chayapod Beokhaimook
Taylor Chott
Cory Cline
Allison Crouch
Anna Corman
Clare Decker
Dan Dupuis
Mohammad Faruque
Hannah Blum
Trey Hulbert
Leah Jaron
Vishnu Goud Kadirisani
Robert Keller
Melinda Krebs
Nolan Leue
Joshua McCulloch
Patrick Ogilvie
Samara Omar
Madison Post
Michelle Preston
Sampson Ramsay
Carolyn Reilly
Daniel Shang
William Siirola
Alyssa Spomer
Rita Stauter
John Stuntz
Jenny Wolicki

Order of Omega

Recognizes outstanding leadership in fraternity and sorority systems.

Corinne Beck
Keira Bell
Libby Booton
Karlie Gandee
Julian Uy
Michael Warren
Vincent Rignol
Hannah Govett
Jennifer Jacobs
Johanna Smith
Hannah Kirkeide
Marisa LaRouche
Zachary Carlson

Phi Beta Delta

Recognizes achievement through international educational exchange.

Kamilia Putri

Tau Beta Pi

National Honor Society of Engineers

Elliot Gatley Britvec
Corey Brugh
Cory Cline
Caleb Alexander
Courkamp
Shannon Craig
Tessa Cummins
Tucker Darby
Clare Decker
Jason Dibble
Corrine Din
Maxwell Eshleman
Michael Eustis
Ryan James Gasvoda
Mitchell Hinds
Sean Hoefl
Alexis Humann
Dane Hyer-Peterson
Neumann Jacob
Leah Jaron
Kyle Kaminky
David Cameron Long
Zoe Lyman
Claire Mahoney
Andre Montes
Jacob Neumann
Cory A. Nunez
Carolyn Pauly
Steven Rennolet
Austin T Roberts
Steven Sandoval
Brittany Schreiner
Austin C Shaffer
William Siirola
Holden Steppan
Kaitlin Sweeney
Ian Tappan
Yee Wei Teoh
David Van Akkeren
Philip Walker
Benjamin Wallen
Jake Wands
Ryan David Wareham
Quinton Weber
Courtney Widhalm
Logan Yamamoto
Kevyn Young
Nathan Young

MILITARY COMMISSIONS

The following students will be commissioned as Second Lieutenants in the United States Air Force:

Michael A. Blaney
Kristina M. Gately
Matthew S. Jaszai

The following student will be commissioned as Second Lieutenant in the United States Army:

Julian J. Uy

GRADUATE AWARDS

ME Outstanding Dissertation Award

Presented to the ME Ph.D. student whose has demonstrated outstanding achievement and impact in research through the publication and presentation of his/her dissertation and associated publications and professional presentations.

Nathaniel T. Pickle

Mendenhall Prize

Awarded to graduating MS or PhD students who, throughout their graduate program, have demonstrated outstanding academic performance, the ability to conduct cutting-edge research, and the highest standards of integrity and professional conduct.

Satyan Singh

Dr. Bhakta B. and Sushama Rath Research Award

Awarded for the best Ph.D. thesis with the potential for the greatest societal impact.

Laura E. Condon

Advisor: Reed M. Maxwell, Professor of Geology and Geological Engineering

FACULTY AWARDS

The Dean's Excellence Award

Recognizes a full-time tenured or tenure-track academic faculty member who has demonstrated significant and meritorious achievement in teaching and scholarship.

Dr. Carolyn Koh

Professor of Chemical and Biological Engineering

Dr. Koh is the Director of the Center for Hydrate Research with expertise in the fields of gas clathrate hydrates, inclusion compounds and hydrophobic hydration. Dr. Koh has more than 145 peer-reviewed publications, and is co-author of the definitive book on hydrate science. In the classroom, Dr. Koh has a gift for connecting with students through her lectures and active learning techniques and she has received numerous teaching awards including the Order of the Omega Teacher of the Year in 2012 and Outstanding Faculty Member from the CBE Senior Class in 2013.

The CSM Teaching Award

Presented to recognize superior teaching at the undergraduate level over a period of several years and to provide encouragement and incentive for teaching achievement.

Dr. Cynthia Rader

Teaching Professor of Electrical Engineering and Computer Science

Dr. Rader has taught computer science at Mines since 2000. She is recognized as an instructor who tirelessly and patiently works to educate students. Dr. Rader's pedagogical innovations include project-based learning that mimics industrially relevant "agile" software development practices allowing students to acquire the important skill of test-driven development (TDD). She has developed online-mediated courses and instructional videos as well as restructured and designed classroom instruction in which she integrates state of the art tools.

Dr. Amanda Hering

Assistant Professor of Applied Mathematics and Statistics

Dr. Hering joined Mines in 2009. Since joining Mines, Dr. Hering has taught a variety of courses in statistics and multivariate analysis. Dr. Hering's demonstrated excellence in teaching is seen in the innovation she brings to her classes, including the incorporation of poster sessions that attract representatives from industry and allow her students to make the transition from the abstractions in the classroom to the practical issues involved in real-world applications. She developed the Statistics Practicum in which students work on independent projects creating statistical models to solve real-world issues provided by sponsoring organizations.

The Alfred E. Jenni Faculty Fellowship

Awarded to a faculty member based on track record of scholarship in educational research and development; reputation among students for strong dedication and concern toward their learning, and a vision of how the individual will contribute to institution-wide enhancements in education and how this vision can be translated into viable actions.

Dr. Kip Findley

Associate Professor of Metallurgical and Materials Engineering

Dr. Kip Findley has developed new laboratory exercises to enable students to better understand underlying principles in the field of Metallurgical and Materials Engineering. His NSF Research Experience for Undergraduate (REU) grant focused on Advanced Metallurgical Design for Transportation, Infrastructure, and Energy and was considered a huge success by the participating undergraduates. He received the MME Outstanding Faculty Award in 2010 and the NSF Early Career Development Award in 2010.

Mr. John Persichetti

Teaching Associate Professor of Chemical and Biological Engineering

Professor Persichetti has incorporated biology and bioprocessing into the Chemical and Biological Engineering design curriculum, has excelled as an undergraduate educator and is the lead instructor in the capstone design course and summer Field Session. He brings relevant chemical, environmental and bio-based engineering experience to the courses he teaches and he has significantly restructured and developed multiple courses, providing students an industrially relevant and innovative design viewpoint.

Emeritus Faculty

Distinguished faculty members announced their retirement during the past academic year and have been awarded Emeritus Status. Mines' University Emeritus faculty have demonstrated exemplary service through a distinguished teaching career and achievement of national and international recognition through outstanding scholarship.

Dr. Tom Davis

University Emeritus Professor of Geophysics

Dr. Brajendra Mishra

University Emeritus Professor of Metallurgical and Materials Engineering

Dr. Chester Van Tyne

Emeritus Professor of Metallurgical and Materials Engineering

Dr. Terence Young

Emeritus Professor of Geophysics

KEYNOTES



Marvin L. Kay

Marvin L. Kay graduated from Colorado School of Mines in 1963 with a degree in Mining Engineering and as an Army ROTC Distinguished Military Graduate. The future Orediggers football coach and athletics director was literally born on campus during his father's junior year and grew up playing sports among the mining towns on Colorado's Western Slope. The man who would devote most of his life to Mines never saw himself heading anywhere else.

As a student at Mines, Kay was very active in athletics and student life. He was honored to serve as President of two classes and his fraternity. In athletics he lettered in wrestling and football and earned small college All American honors in football and a free agent contract with the Denver Broncos.

After serving two years as a lieutenant in the Army Engineer Corps he returned to Mines in 1966 to begin his career in the Department of Athletics. His first assignments were as the freshman football coach and head swimming coach. In 1969 he was appointed head football coach, a position he held for 24 years and following that served nine years as director of athletics. After retirement from athletics in 2003 he joined the Colorado School of Mines Foundation where he serves today.

During his time at Mines, Kay has been active in the Golden Community. He was on the Golden City Council for 12 years and served as mayor for eight of those. He continues his involvement today with several community organizations. Marv has been honored with several civic, philanthropic and athletic awards but is most honored by those from Mines, including the Mines Medal, Mines Faculty Distinguished Lecturer, having spirit mascot Marvin the Miner named in his honor, induction in the Mines Athletic Hall of Fame, and his name on the Marv Kay Football Stadium.

Marv and his wife Diane continue to live in Golden and enjoy spending time with their two daughters, Chandra and Kendra, and their families, also Golden residents.



Senator Owen Hill

Colorado State Senator Owen Hill is the chairman of the Senate Education Committee, vice-chairman of the Senate Finance Committee, and a former U.S. Air Force Captain. He is a graduate of the U.S. Air Force Academy and holds a Ph.D. in Economic Policy Analysis from the Pardee RAND Graduate School.

At the Air Force Academy, Hill began a major in mechanical engineering, but quickly shifted to Operations Research. This major, together with the Air Force Academy's rigorous core curriculum covering topics from physics to philosophy and thermodynamics to military theory, provided the spark of curiosity that quickly fanned into a fire for learning, no doubt aided along by his chemical engineer father and biology teacher mother.

After completing his PhD dissertation on efficiencies in aircraft modernization practices, Hill was stationed at Peterson Air Force Base in Colorado Springs. Following his career in the Air Force, Hill was CFO for Compassion International, a worldwide children's advocacy nonprofit serving over 1 million children in 27 countries.

Hill began his political career in 2009 and won a seat in the State Senate in 2012 representing El Paso County. During the Senate's off-season (June-December) Senator Hill operates a small business servicing American nuclear ballistic missile warning systems around the globe. This physical work, which entails rappelling off of the missile, provides a rich balance to his political career and education advocacy work.

Senator Hill and his wife Emily reside in Colorado Springs with their four children.

COLORADO SCHOOL OF MINES: A TRADITION OF INNOVATION

Since its founding in 1874, the Colorado School of Mines has distinguished itself by developing educational and research programs that address the world's critical needs for energy, materials, water, and the responsible stewardship of the earth. This nexus between the earth, the environment, and society's need to generate and distribute energy in an economic and sustainable way is central to Mines' specialized mission. Today's graduates continue the Mines tradition of innovation and take their place in a long line of alumni who have put their degrees to work to advance the frontiers of knowledge in both the traditional and emerging fields of science and technology.

CONFERRED DEGREES

Departmental degrees are awarded at Colorado School of Mines according to the order in which the department or program originally conferred a degree, dating back to the first Mines commencement in 1883, at which two Mining degrees were awarded. The College of Engineering and Computational Sciences, established in 2011, offers the newest degrees.

SILVER DIPLOMAS



While the degrees granted by Colorado School of Mines are valuable and unique, so are the diplomas themselves. The Mines silver diploma is a long-standing tradition dating back to 1933 when Charles A. Hull engraved a silver diploma as a gift for his son, a recent graduate. The diploma caught the eye of then President Melville F. Coolbaugh, who asked that silver diplomas be made for all Mines graduates.

Starting with the commencement of 1934, Mines began issuing silver diplomas, measuring 5 by 6 inches and etched into pure sterling silver. Creating these diplomas required two men spending six weeks (or 500 man hours) making 19 delicate etchings in each diploma.

Today the tradition of metal diplomas continues, with all students receiving a silver/nickel plated diploma upon graduation from Mines.

ACADEMIC REGALIA: CAPS, GOWNS, AND HOODS

The academic dress worn by today's graduates reflects a tradition begun in the late twelfth century, when universities were taking form, and codified in the U.S. in 1895 under the Academic Costume Code. Originally the dress may have had a practical purpose: to keep the student warm in unheated buildings, but today it is ceremonial and divided into three parts: caps, gowns, and hoods.

The traditional cap is the mortarboard with colored tassels to identify the graduate's discipline or field of study. Doctors of Philosophy wear a gold tassel, Master of Science a yellow tassel, Master of Engineering an orange tassel, and Bachelor of Science a black tassel.

Bachelors' and masters' gowns are untrimmed (though women may wear white colors with a bachelor's gown), but doctors' gowns are faced down the front with velvet and trimmed with three velvet bars across the sleeves. The velvet facing and bars are black or the color of the field of study.

Hoods are also black. The doctor's hood is four feet in length, the master's three and one-half feet. Colorado School of Mines hoods are lined with silver and blue, the official school colors. The velvet border on the hood, which is three and five inches wide for the master's and doctor's degree, respectively, identifies the field of study to which the degree pertains. Colorado School of Mines hoods have yellow velvet borders for Master of Science, orange velvet borders for Master of Engineering and blue velvet borders for Doctor of Philosophy.

UNIVERSITY MACE

The Colorado School of Mines Faculty Senate Distinguished Lecturer, Dr. Tracy Camp, carries the mace, which has a rich history as a symbol of authority back to the 13th century. In commencement processions, the mace is carried before the president and the dignitaries composing the platform party. The Mines Mace stands 4 feet 8 inches high and weighs 16 pounds. The core is a rosewood staff, covered by fitted brass and cast bronze, silver plated, and topped by Mines mascot Blaster. Mines Professor Emeritus Robert Taylor executed the design and Mr. Emil Dangreau produced the finished standard with the official school seal photoengraved on the base of the staff.

THE BOOK: *De Re Metallica*

The Colorado School of Mines Faculty Senate President, Dr. Ken Osgood, leads the academic portion of the commencement procession, carrying a replica of the sixteenth-century treatise *De Re Metallica*. Widely regarded as the seminal text on mining and the science of metallurgy, this historic volume serves as a symbol of the body of knowledge shared by Mines' faculty and students.

The book is placed on a stand at the front of the stage. Its opening marks the start of the commencement ceremony and also recalls the beginning of the students' education at the school. The ceremony's end is signified by the closing of the book.

A first edition of *De Re Metallica*, written by Georg Bauer under the pseudonym Agricola and printed in 1556, resides in the vault of Mines' Arthur Lakes Library, as does a subsequent edition printed in 1621. In addition to these original texts, the library also houses several copies of Herbert Hoover's 1912 translation from the Latin, including one signed by the nation's 31st president and his wife, Lou. Hoover contributed the introduction and lengthy footnotes. He visited mine sites and carried out Agricola's formulas in laboratories to check the translations. Issued in a limited edition, it quickly became a collector's item. Of the 3,000 copies printed, more than half were given free to mining engineers and students.

PRESIDENTIAL MEDALLION

The silver medallion, worn only by the president of the Colorado School of Mines, was designed by Dr. Rex Bull, an emeritus professor in the George S. Ansell Metallurgical and Materials Engineering Department, and cast by students using silver donated by the Colorado School of Mines Alumni Association. It was first used at the inauguration of Dr. George S. Ansell as the 13th president of the school on February 8, 1985.



MINES ALMA MATER

The Mines Alma Mater, to the tune of Aura Lee, is played during the Commencement Recessional, to acknowledge graduates' transition from Mines students to Mines alumni. Lyrics for the Mines Alma Mater were written by Lois Moessner Leonard, wife of Weldon I. Leonard, Engineer of Mines, 1949.

*Raise your voices engineers, your devotion sing
To the greatest School of Mines, let the chorus ring
Hail to thee, C.S.M. to our hearts most dear
Ev'ry miner lauds name and ev'ry engineer.*

*Honor, glory to thy name, these we pledge anew
While we live to sing thy fame, Alma Mater true
Hail to thee School of Mines, silver and blue
Ev'ry Miner sings thy praise, Alma Mater true.*