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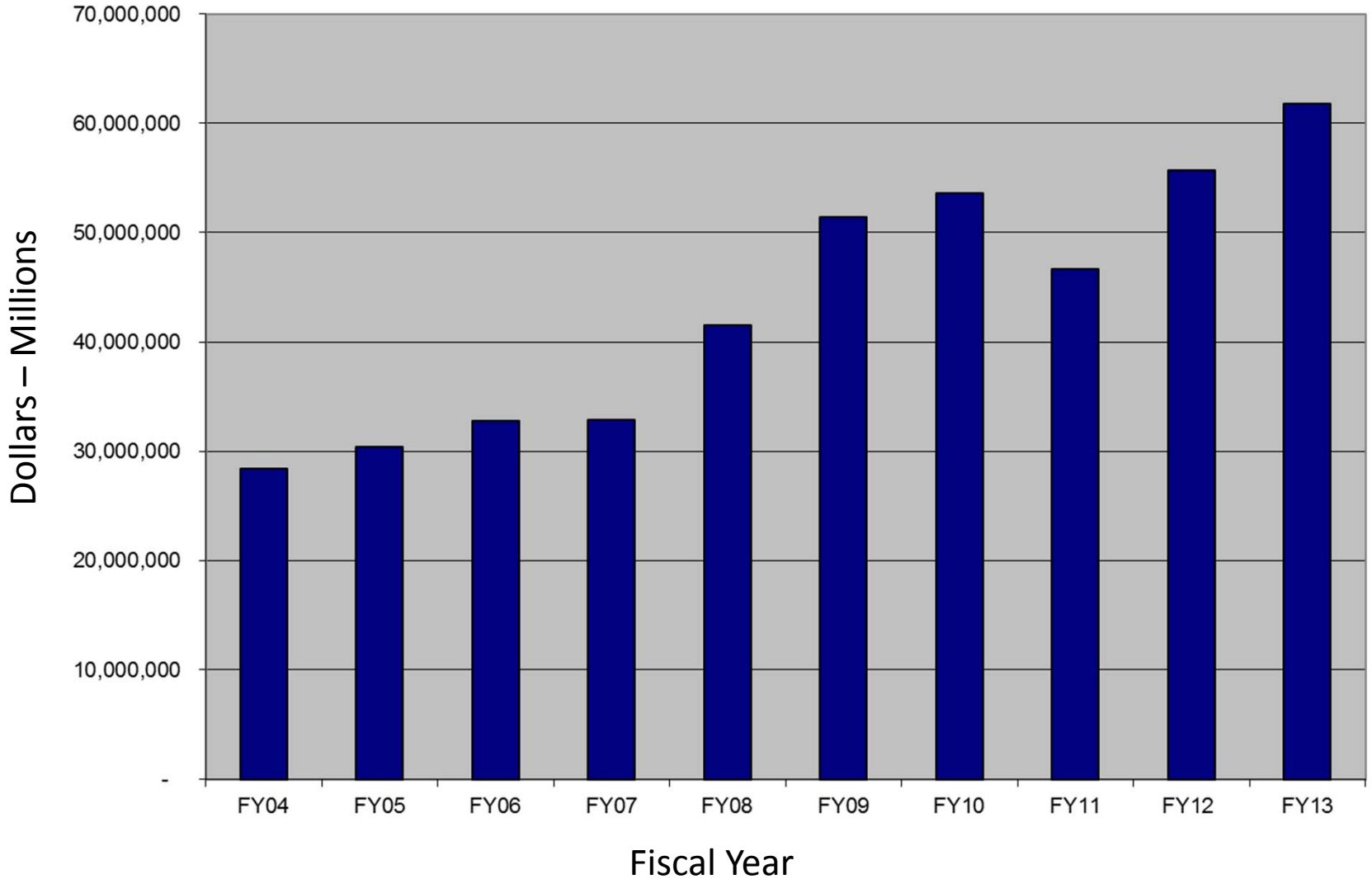
Research at Mines



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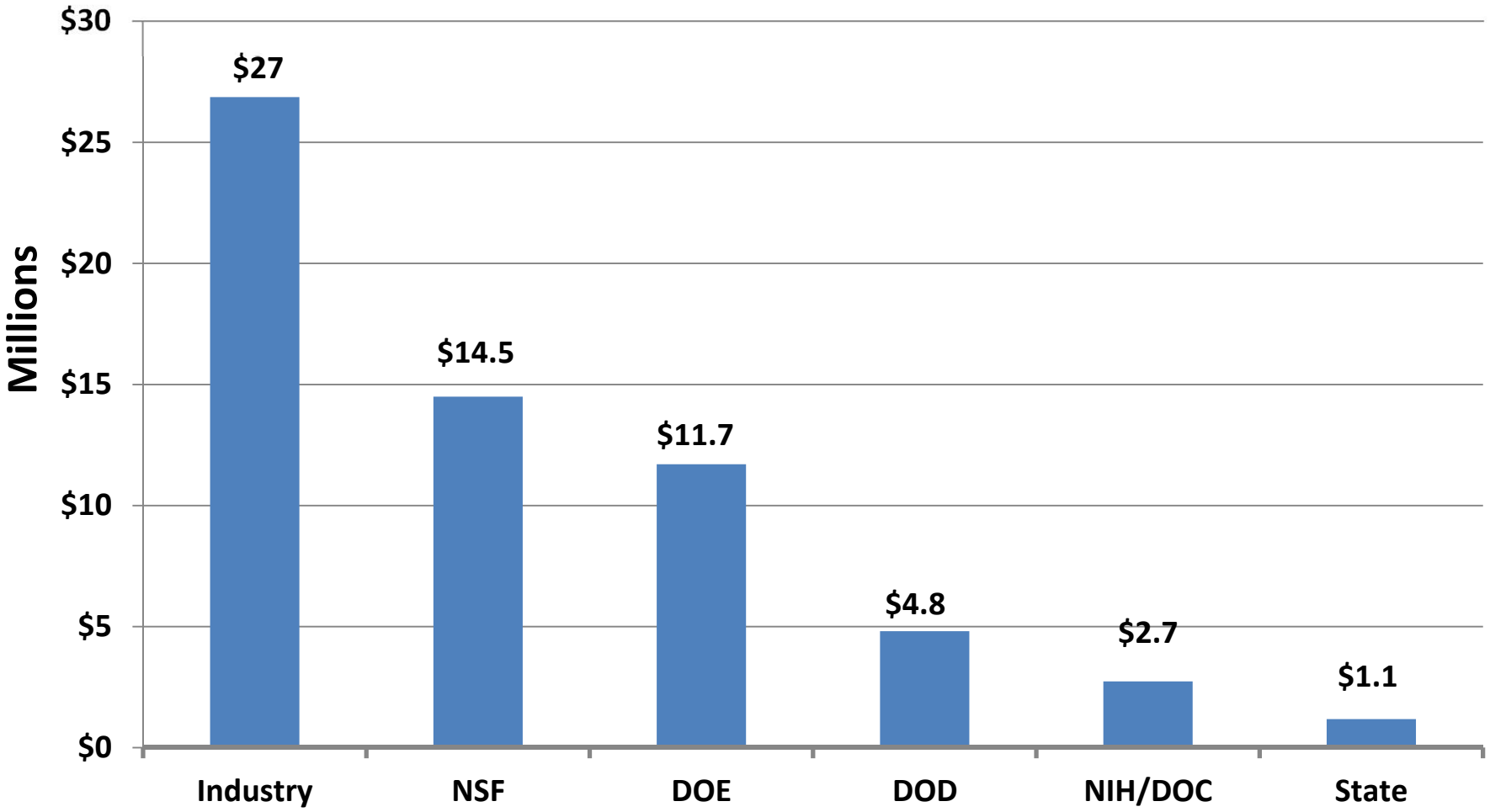
FY13 Awards by Sponsor



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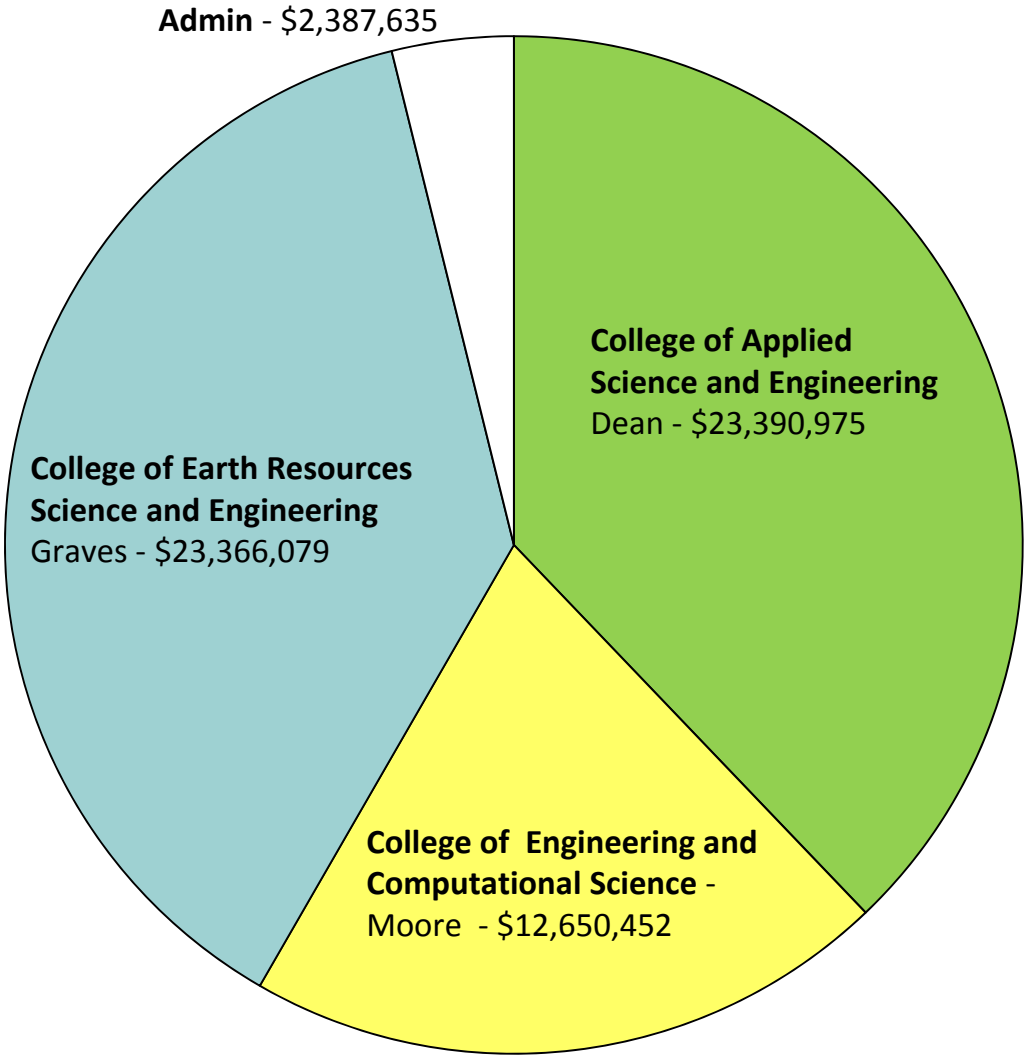
FY13 Awards by College



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CMI | Critical Materials INSTITUTE

AN ENERGY INNOVATION HUB

"Innovate to reduce supply risk, enable clean energy technologies"

Director – Alex King – Ames Lab

Deputy Director – Rod Eggert

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CMI | Critical Materials INSTITUTE

AN ENERGY INNOVATION HUB

- Process Engineering (Anderson, Mishra, Kaufmann, Speer, Taylor)
- Supply-Chain (Eggert)
- Environmental Sustainability (Way)
- Education, Training & Outreach (Middleton, Martin)
- $14 million over 5 years

<u>Potential Leveraging</u>

Economics, Geo Sciences, Mining, Bio Sciences & Engineering

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Materials Genome Initiative

"Integrated Computational Materials Engineering (ICME) Development of Advanced Steel for Lightweight Vehicles"

$6.0 M DOE funds + $2.5 M Industry cost-share

DOE Advanced Manufacturing Office

INNOVATIVE MANUFACTURING INITIATIVE:

"Quenching and Partitioning Process Development to Replace Hot Stamping of High Strength Automotive Steel"

$1,167,878 DOE funds + $324,000 Industry cost-share

Matlock, De Moor, Speer

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New Initiatives

- Unconventional Oil & gas, Fracking (Santi)
- Mines - NREL (DOE)
  Geothermal Institute (Fleckenstein)
- School of Minerals and Energy, Nazarbayev University, Earth Sciences Institute, Kazakhstan (Middleton)
- Bio Sciences & Bio Engineering
- NSF – Engineering Research Centers (ERC)

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ERC Pre Proposals

Mines is the Leading Institution:

- Dorgan – "Sustainable Polymers"
- Herring - "Nano-Interfaces for Energy and Water Systems, NEW Systems"
- Illangasekare – "Integrated Management of Transitional Energy and Environmental Systems (iMATE2s)"

Mines is the Supporting Institution:

- Gutierrez – "Sustainable and Resilient Urban Underground Infrastructure: SRUC"
- Johnson – "Making Wind Energy the Most Profitable, Affordable, Reliable and Compatible Renewable Energy Source: WindPARC"
- De Moor – Innovative Manufacturing, Materials, and System Design for Efficiency"

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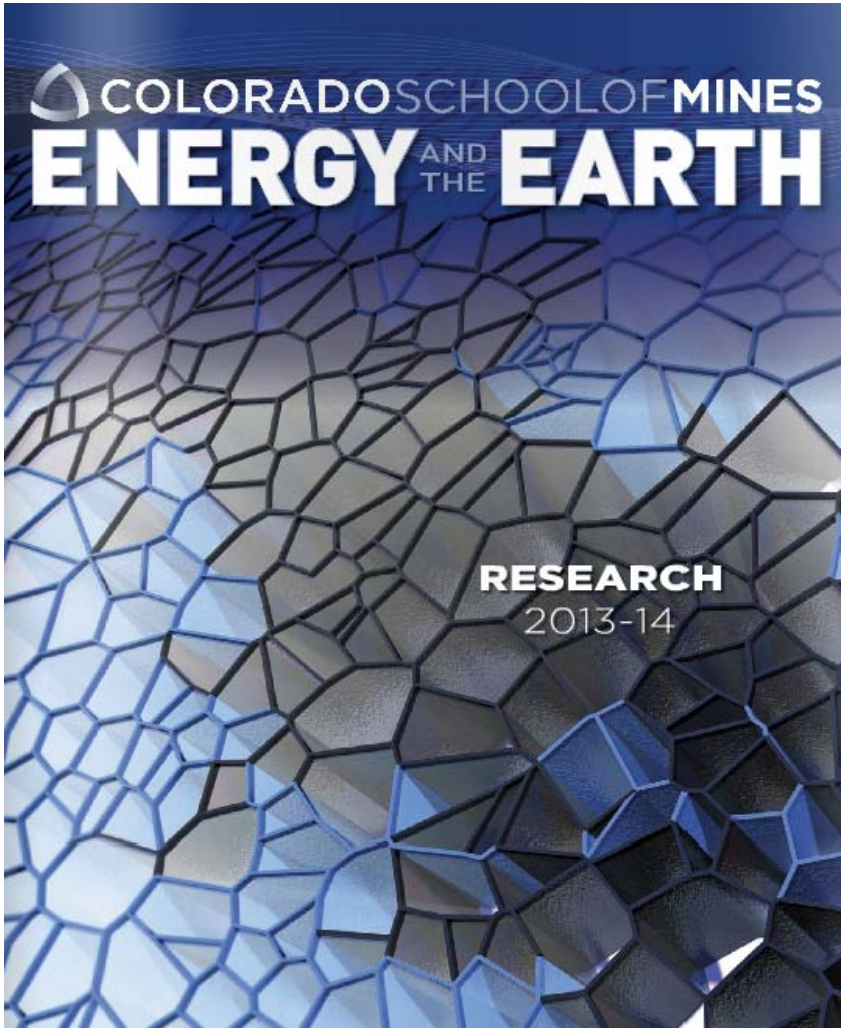
Coupling of Disciplines



Xiaolong Yin

Keith Neeves

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Bio Sciences Initiatives

- Krebs (CSM -Chemical and Biological Engineering) - "Dual Delivery Biomaterial System for the Treatment of Growth Plate Injuries"

- Boyes (CSM Chemistry) - "Bone Regeneration using Biodegradable Polymer Scaffolds"

- Neeves (CSM -Chemical and Biological Engineering) - "Air flow-dependent modifications of airway epithelial basal/progenitor cell phenotype: Implications in cystic fibrosis disease pathogenesis"

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Grand Challenges in Engineering

London, March 2013

- Energy & Environment
- Synthetic Biology