



# buckeye/engineering

AUTUMN/2013

## Best in the world: Ohio State's new microscopy center

### INSIDE/

3-D PRINTING ADDS NEW DIMENSION

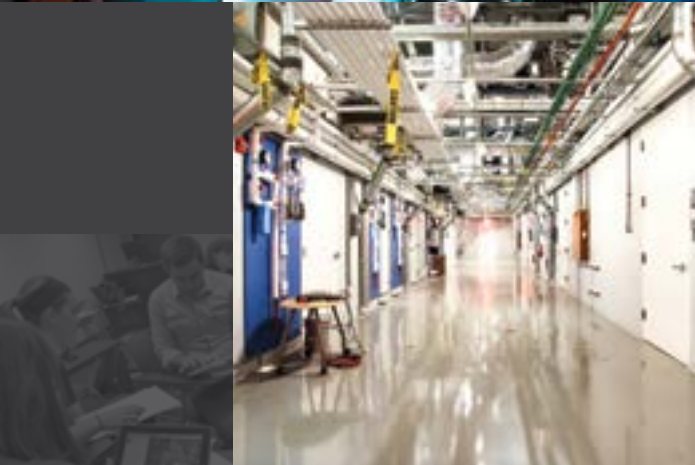
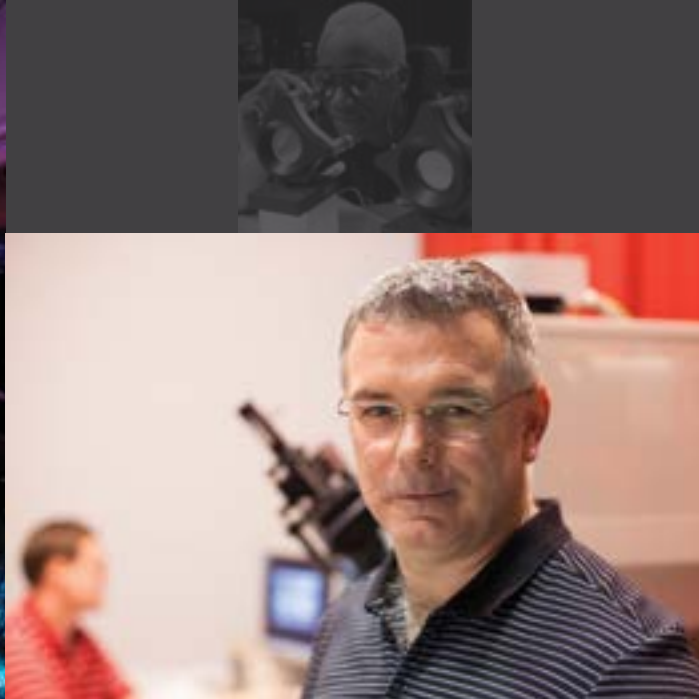
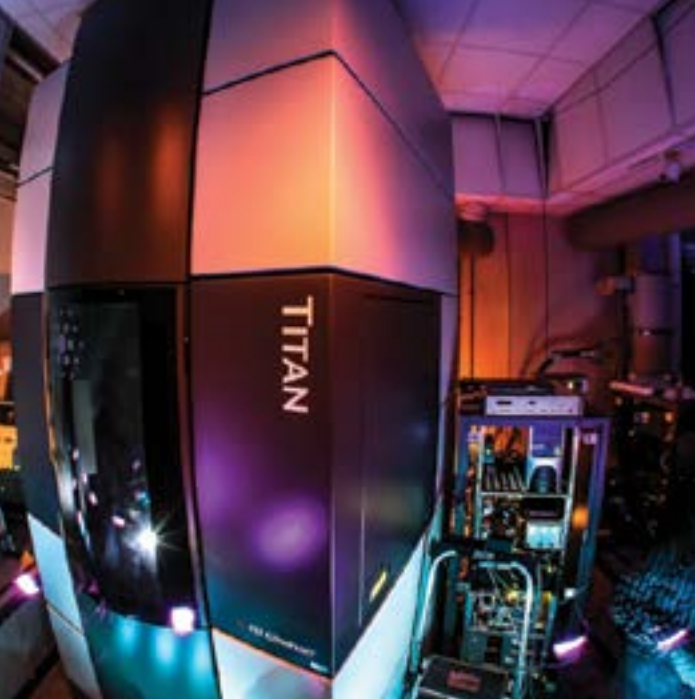
BIOMED BREAKTHROUGH

ALUM LIVES HIS FOOTBALL DREAM



**THE OHIO STATE UNIVERSITY**

COLLEGE OF ENGINEERING



## New center to revolutionize materials research

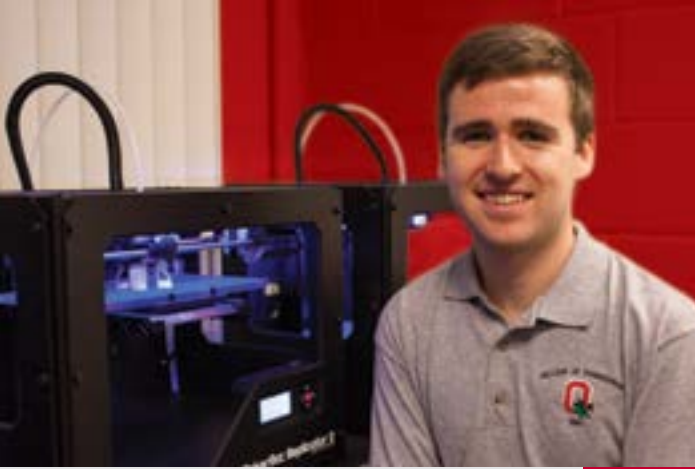
The Ohio State University's new Center for Electron Microscopy and Analysis (CEMAS) will be the world's materials characterization epicenter for business and academia alike.

"We believe we've built the best electron microscopy center in the world," said CEMAS Director David McComb, an Ohio Research Scholar and professor of materials science and engineering. "Every microscope here is exceeding specifications. We're now pushing the limits of the technology and finding how good the microscopes really can be."

Armed with \$28 million dollars of equipment, including ten FEI electron microscopes optimized to perform analysis on the atomic scale, the facility offers tremendous research capabilities under one roof. CEMAS' instrumentation and expertise enables analysis beyond just metals and ceramics. Researchers can investigate cellular structures of polymers, tissues, organic membranes, nanoparticles and gels. This relatively new technique lends itself to materials innovation in transportation, healthcare and electronics, among other industries.

Learn more at [go.osu.edu/electron](https://go.osu.edu/electron)





## 3-D printing adds new dimension to first-year engineering

Twelve new MakerBot Replicator 2 desktop 3-D printers promise to add a whole new dimension to Ohio State's nationally recognized First-Year Engineering Program. Brand new Buckeye engineers will move beyond modeling objects and learn how to manufacture their own creations with this emerging technology.

"The idea is to take the traditional field of engineering graphics and extend it into the 21st century," said FYE Director John Merrill. "Not only using 3-D technology as far as computer animation, but also turning that into actual objects that students can program and print."

The printed objects will be incorporated into design-and-build team projects and used to enhance lab learning.

"What's really exciting is that the students will immediately see what they can do and what technology is out there," said mechanical engineering major Josh Stauffer, a student instructional assistant. "Man, if we had those things freshman year, it would have been so great!"

Learn more and watch at [go.osu.edu/3d](http://go.osu.edu/3d)



## Alum lives his football dream

Since he was five, Bob Hyatt had dreamed of playing football for Woody Hayes. The civil engineering alum recently shared his story on the But for Ohio State website...

*"This kid grows up practicing very hard. Even though he was All-Ohio, he was not recruited by the mighty Buckeyes because he was not fast enough, not big enough and only played in the single A division of high school."*

Hyatt turned down offers from Ivy League, MAC and Ohio Conference schools, and enrolled at Ohio State in 1973. He started taking engineering classes and made the football team as a walk-on.

After enduring a brutal first season, he played enough to letter his sophomore and junior years. His senior season in '76 was more than he could have dreamed.

*"This small, slow wingback drops his 40 time, gains 15 pounds and gets to play regularly. He makes a few runs, catches a pass or two, holds placement for All-American kicker Tom Skladany and magically scores the winning touchdown against Penn State."*

Today Hyatt is co-owner of Pipe Line Unique Services, which supplies patented equipment that injects drag reducer agent into oil and gas pipelines. From the gridiron to the boardroom, he continues to apply Woody's wisdom about the importance of hard work and dedication.

Learn more at [go.osu.edu/hyatt](http://go.osu.edu/hyatt)

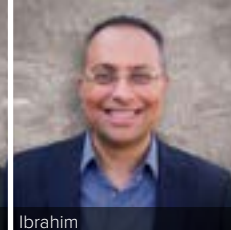




Thomas



Dietz



Ibrahim



Dubowski

## Engineering solutions for Ohio manufacturers

Led by Honda executive-on-loan Rich Spivey, the Ohio Manufacturing Institute connects Ohio manufacturers with Ohio State's vast technical expertise and resources. Leveraging his years of experience and Honda's approach to supplier relationships, Spivey helps bridge the industry-academia gap.

At any one time, the College of Engineering center manages five to ten projects with multiple companies, ranging from \$1,000 to \$50,000. Typical projects include product design support, new manufacturing process development, material analysis, product testing, or helping resolve ongoing quality issues.

"These applied engineering projects are a great mechanism to introduce manufacturers to the resources at Ohio State and to keep faculty members aligned with industry needs," said Spivey. "Ultimately, we strive for mutually beneficial relationships that lead to more advanced research projects for the university and economic sustainability for our partners."

Learn more: [go.osu.edu/omi](http://go.osu.edu/omi)



## College honors outstanding alumni

The College of Engineering will honor 14 outstanding alumni in October at the 16th Annual Excellence in Engineering & Architecture Alumni Awards:

Thomas L. Thomas (BS '66, MS '66, EE) will receive the Benjamin G. Lamme Medal, the college's highest honor.

James F. Dietz (BS '69, MS '70, CE) is being honored with the Meritorious Service Citation.

Tamer S. Ibrahim (BS '96, MS '98, PhD '03, EE) will receive the Texnikoi Outstanding Alumni Award, honoring achievements since graduation.

Kurt M. Dubowski (MS '47, PhD '49, CE) will receive the College of Engineering Lifetime Achievement Award for Leadership in the fields of forensic toxicology and clinical chemistry.

Ten alumni will receive Distinguished Alumni Awards: Yoni Adonyi (MS '86, PhD '89, WE); Robert J. Borel (BS '65, MS '65, EE); Michael Bragg (PhD '81, AAE); Songsdhit "Joe" Chongsirawatana (BS '96, EE; MS '98, BME); Paul T. Dubetz (BS '80, CE); Ray Harishankar (BS '90, CIS); Ronald M. Jezerinac (BS '67, CE); Bruce Lavash (BS '77, MS '78, ME); Phillip Markwood (BS '61, ARCH); and Alan McKnight (BS '76, LARCH).

Learn more at [go.osu.edu/awards13](http://go.osu.edu/awards13)



## Biomed breakthrough advances diagnostic imaging

Ohio State spin-out Core Quantum Technologies (CQT) will use a \$150,000 Phase I Small Business Innovation Research grant to commercialize fluorescing nanoparticles for medical diagnosis, imaging and research.

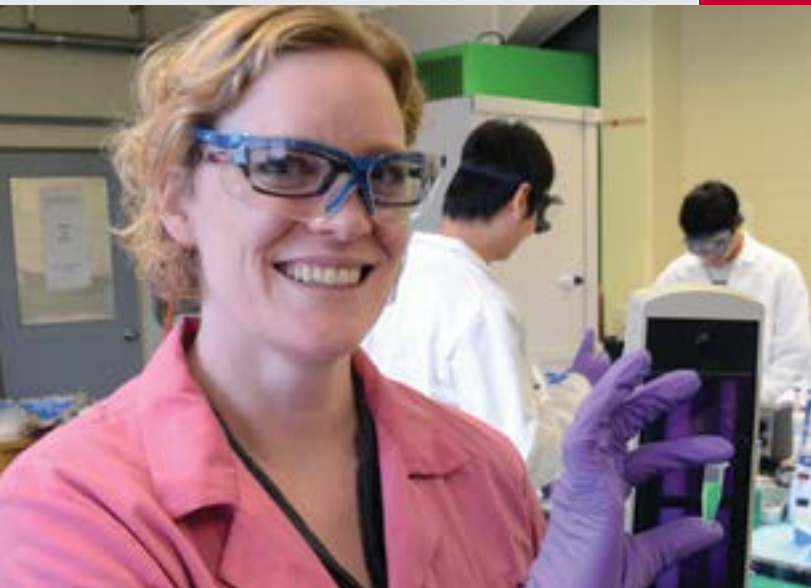
CQT was co-founded by Jessica Winter, a professor in the College of Engineering; Gang Ruan, a chemical and biomolecular engineering adjunct professor; and chemical engineering alumnus Kunal Parikh.

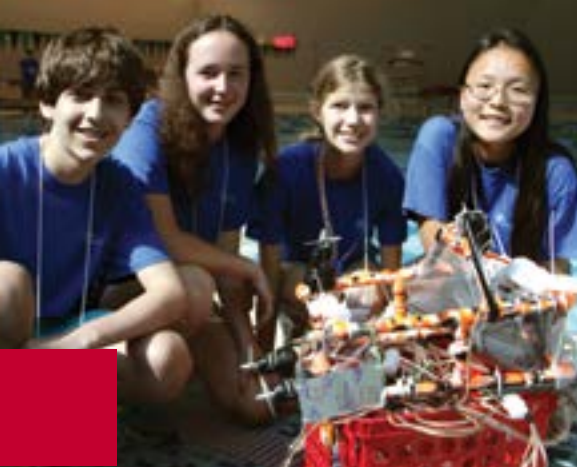
CQT's product, the MultiDot, is a group of semiconductor nanoparticle quantum dots that allow researchers to continuously track molecules with greater brightness, longevity

and stability than currently available methods. In biomedical applications, researchers could attach the MultiDot to specific cell structures for improved disease diagnosis and understanding. A product variation called the Magdot adds magnetic particles to enable separation and manipulation of cellular biomarkers.

"This technology has very real potential to enhance clinical diagnosis, improving patient outcomes," Winter said. The company is in the process of raising \$750,000 to take the MultiDot to market.

Learn more: [go.osu.edu/cqt](http://go.osu.edu/cqt)





## Planting seeds for STEM careers one camp at a time

The College of Engineering—a leader in promoting STEM education to young women and men—spends each summer focusing on the next generation of engineers. Through a variety of summer camps, the college aims to inspire more K-12 students to pursue engineering in college and beyond.

“Our events and activities are designed to motivate students to choose rigorous classes in school so they will be prepared to study engineering in college,” said David Tomasko, associate dean for undergraduate education and services.

With activities ranging from building robots to designing ice cream scoops for those who have trouble grasping objects, the camps bring engineering to life in a fun, engaging way. They also teach students about the impact engineers have on people and society, provide firsthand experience of college life, and introduce students to role models. The camps are hosted by the college’s Engineering Education and Innovation Center, Minority Engineering and Women in Engineering programs.

In 2013 alone, the College of Engineering planted seeds for STEM careers with 284 K-12 students and teachers.

Learn more at [go.osu.edu/coecamps](http://go.osu.edu/coecamps)



## Ohio State engineering degree: bang for Bucks

Starting salaries of Buckeye engineers are among the best in the nation, according to financial research firm NerdWallet. With an average salary of \$59,468, The Ohio State University College of Engineering is ranked 22nd overall and 10th among engineering/computer science programs. The list is based on exit surveys from 100 schools.

When accounting for tuition, it becomes even more clear that Ohio State provides one of the best engineering education values in America. Additional analysis by the college shows that when comparing dollars earned per the expense of annual tuition and fees, Ohio State provides the best value overall for students paying out-of-state tuition costs. Engineering students paying in-state tuition costs can achieve the third best value nationwide at Ohio State.

Learn more: [go.osu.edu/coevalue](http://go.osu.edu/coevalue)



### OUT-OF-STATE EDUCATION: #1

The Ohio State University College of Engineering



\$ earned per annual tuition dollar: **\$2.34**

### IN-STATE EDUCATION: #3

The Ohio State University College of Engineering

\$ earned per annual tuition dollar: **\$5.92**



## BRIEFS:

**Hund receives \$450,000 for pacemaker research**

[go.osu.edu/hund](http://go.osu.edu/hund)

**Grejner-Brzezinska named chair of Civil, Environmental and Geodetic Engineering**

[go.osu.edu/gbchair](http://go.osu.edu/gbchair)

**College of Engineering steps up campus campaign in big way**

[go.osu.edu/44](http://go.osu.edu/44)

## UPCOMING EVENTS:

**Reunion-Homecoming Weekend**

October 18-20

**Engineering Expo Career Fair**

September 18

[engineering.osu.edu/events](http://engineering.osu.edu/events)

## CONNECT:

[engineering.osu.edu](http://engineering.osu.edu)

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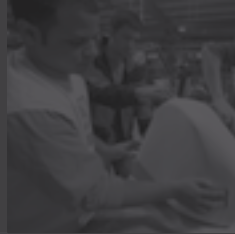
[twitter.com/OSUengineering](https://twitter.com/OSUengineering)

[go.osu.edu/COEin](http://go.osu.edu/COEin)

## GIVE:

**Support the college in a variety of ways**

[giveto.osu.edu/engineering](http://giveto.osu.edu/engineering)



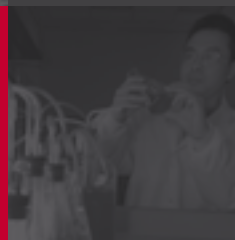
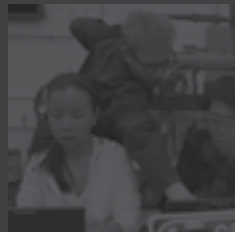
## THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

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