aluminum hydride, and the design of low alloy steels for coal gasification and liquefaction vessels.

**What are you working on now?**

My current research relates to laser-sustained nitrogen and argon plasmas and their interactions with metals, particularly titanium and its alloys. The potential for developing hard nitride coatings is being explored.

**How many people do you work with?**

Within the department, I work with a faculty and staff of 60 people, approximately 35 visiting scholars per year, and a student body of up to 320 undergraduates and graduate students. However, as ESM teaches all the service mechanics courses across several colleges, we teach mechanics to approximately 4400 students per year. Our research activities involve extensive collaborations with Penn State’s Research Institutes and Colleges, and with numerous universities across the globe. It is becoming increasingly important for students to have international experiences that will prepare them to address the grand challenges facing our global society.

**If a young person approached you for career advice about pursuing engineering, what would you tell them?**

An engineering background provides a very strong foundation for whichever career you decide to pursue. Engineering is not just a pathway to industry or academia, it underpins the professions (medicine, business, law, and entrepreneurship), leadership positions in government, humanitarian organizations, entertainment, and public service. We need to see more engineering students entering the fields of politics and public policy too.

**Hobbies?**

Reading, hiking, and archaeometry.

**Last book read?**


---

**Volunteerism Committee**

**Profile of a Volunteer**

Ben Rasmussen, Manufacturing Engineer, Caterpillar Inc.—Sumter Hydraulics

Volunteers can make a serious impact—especially when they have the audacity to tackle larger projects. When Ben Rasmussen was in high school and looking for an Eagle Scout service project, he chose a challenging one: Design and build a bridge, earthen ramps, and retaining walls in a forest preserve area to allow for removal of invasive species. It’s not something just any Scout could do. But it fit him well. He still likes to take on big challenges and use his gifts to serve others in meaningful ways.

Rasmussen knew he wanted to be an engineer and found his way into materials science at the University of Illinois at Urbana-Champaign. Graduating in 2010, he was hired at Caterpillar’s tech center in Peoria, Ill. Next, he spent two years working for Caterpillar in Mississippi as a remanufacturing engineer in metallurgical lab infrastructure and salvage processes. Two years ago, he began a new role in Caterpillar’s Sumter, N.C., hydraulics facility. He shifted from R&D into the fast-paced job of supporting needs in a hydraulic cylinder manufacturing shop.

During college, Rasmussen joined his school’s Materials Advantage chapter and later the Peoria Chapter. “I was somewhat active but not in leadership until I was asked to take on additional roles. That really spurred my involvement,” he recalls. He became active on the national Emerging Professionals Committee. The group targets his own demographic—recently out of college and beginning a career. “We identify their needs and are the voice of younger members,” he explains.

After his three-year committee term, Rasmussen has now joined a cause near and dear to his heart—the national Volunteerism Committee. “It’s at the root of everything that keeps ASM going. We make sure volunteers are recognized and appreciated,” he says. “This has a global impact on the entire organization.”