

# PURDUE MECHANICAL ENGINEERING



## *The Hawkins Memorial Lecture in Heat Transfer*

**Dr. Cynthia Hipwell**

*Texas A&M Engineering and Experiment Station  
Texas A&M University*

*Thursday, October 10, 2019  
4:30 pm WALC 1055 (Hiler Theater)*

## **From Megabits to Terabits: Innovation Tools and Nanotechnology for Aggressive Technology Growth**

### **Abstract:**

The incredible pace of areal density growth has fueled the hard disk drive industry for the more than 30 years. With 10s of companies 30 years ago to just 3 today, the competitive industry has not been for the faint of heart. Aggressive areal density growth enabled new capacity points and new products for customers, but interestingly, has also been the most significant cost reduction opportunity for the business. With the pace of technology growth driving economics for the industry, aggressive technical competition arose. How does a company get and stay ahead in this environment? How do innovators in a large company not get bogged down by large company business processes?

Dr. Cynthia Hipwell will discuss the technical and business drivers for area density growth in the data storage industry. She will explain the technical drivers leading to the need for Heat Assisted Magnetic Recording as well as some of the published nanoscale technology accomplishments and challenges. In addition, she will discuss using Lean Startup and Agile technology development practices to increase the pace of technology development to match business need requirements. Dr. Hipwell will discuss how she is applying this learning to new projects at Texas A&M in the INVENT (INnoVation tools and Entrepreneurial Nano Technology) Lab.

### **Biography:**

Dr. Hipwell has been working in the area of technology development based upon nanoscale phenomena for over 20 years. She received her B.S.M.E. from Rice University and her M.S. and Ph.D. in Mechanical Engineering from the University of California, Berkeley. Upon graduation, she went to work at Seagate Technology's Recording Head Division in Bloomington, Minnesota to develop test equipment to characterize the interface between the head and the disk in hard disk drives. During her time at Seagate, Dr. Hipwell held various individual and leadership positions in the areas of reliability, product development, and advanced mechanical and electrical technology development. In these various roles, she established new business processes and an organizational culture that focused on developing innovative solutions from root cause understanding, improved pace of learning, and discipline in experimentation and configuration management. She was inducted into the National Academy of Engineering in 2016 for her leadership in the development of technologies to enable areal density and reliability increases in hard disk drives and was recently elected a National Academy of Inventors Fellow. Dr. Hipwell is currently a Texas A&M Engineering and Experiment Station Eminent Professor at Texas A&M University, teaching classes on innovation and technology development as well as leading the INVENT Lab (INnoVation tools and Entrepreneurial Nano Technology).

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