



ROSS GROUP DISTINGUISHED SPEAKER
SCHOOL OF MATERIALS SCIENCE
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USING STATISTICAL DESIGN METHODS TO PLAN EXPERIMENTS



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ABSTRACT

Statistical methods, such as Design of Experiments (DOE), are used throughout the Department of Defense to design tests of military systems. DOE offers a structured and objective way to allocate test points efficiently and assess the extent of testing required across a complex operational space. In academic research, there is often not a strong collaboration between engineering and statistics communities, and DOE is used less commonly to plan academic experiments. Using an example of optimizing the flexural strength of a composite inorganic binder system, this briefing will discuss the advantages of planning the experiment using a DOE approach.

SPEAKER

Dr. Bell has been a Research Staff Member at the Institute for Defense Analyses (IDA) Operational Evaluation Division since 2008. In this role, Dr. Bell has provided support to the Director Operational Test and Evaluation by reviewing the adequacy of operational test plans, observing tests, providing analyses, and developing operational assessments for submission to the Secretary of Defense and the four Congressional Defense Committees. While at IDA, Dr. Bell has managed tasks covering Counter-Unmanned Aerial System (C-UAS) technologies, Army tactical wheeled vehicles, and Marine Corps amphibious systems, and he has served as a subject matter expert on reliability by provided training courses and by assisting other IDA staff members in reliability analyses and review of reliability test plans. Prior to working at IDA, Dr. earned his doctoral degree in Materials Science and Engineering at the University of Illinois at Urbana Champaign in 2008 and his bachelor's degree in Materials Science at Carnegie Mellon University.

