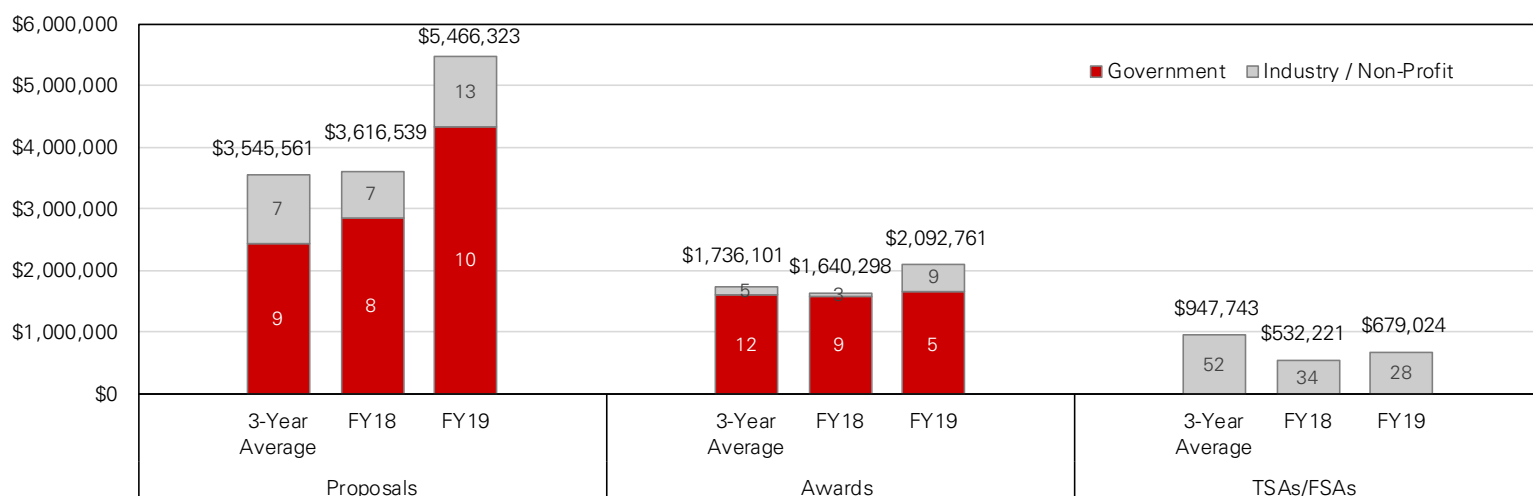


The research programs in the College of Textiles at NC State University are innovative, life-saving, creative, global and thriving. The College also provides tech service to all stakeholders and supports the economic development of the State and beyond. This newsletter gives a brief overview on the research and tech service activities of the faculty, staff and students during the first quarter of Fiscal Year 2019.

FY19 vs. FY18 vs. Three-Year Average (Q1)

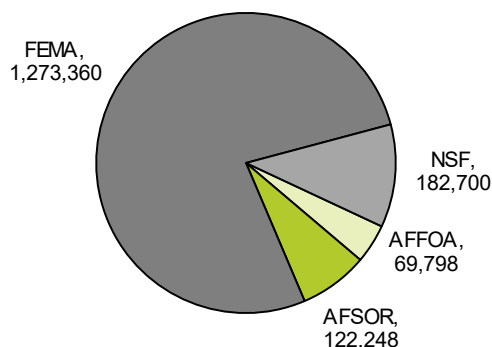


NUMBERS TO DATE (FY19 Q1)

Research Awards Received (\$2,092,761)

- Federal: \$1,648,106 | AFFOA, AFSOR, FEMA, NSF
- Industry: \$444,655 | COMPETE, Eastman Chemical Company, Mermet Corporation, NWI, Porticos Inc., SCEYE SARL, Technology Holding LLC

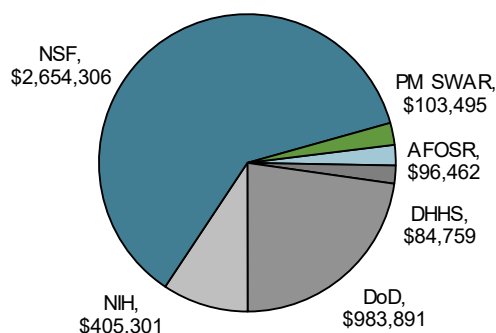
FY19 Q1 Federal Awards by Agency



Research Proposals Submitted (\$5,466,323)

- Federal: \$4,328,214 | AFSOR, DHHS, DOD, NIH, NSF, PM SWAR
- Industry: \$1,138,109 | COMPETE, Cotton Inc., CS America Inc, DSM Dyneema, Johnson & Johnson, NC Biotechnology Center, NWI, Operations Technology Development, Porticos Inc., SCEYE SARL, Technology Holding LLC

FY19 Q1 Federal Proposals by Agency



NUMBERS TO DATE (FY19 Q1) Cont.

Inter-college Research Proposals (4)

- COT share: \$2,679,607
- With CALS, CNR, COE, COS, CVM

Inter-college Research Awards (4)

- COT share: \$197,700
- With COD, COE, COS

Inter-department/unit Research Proposals (3) \$1,017,312

Inter-department/unit Research Awards (3) \$1,376,579

Graduate Student Support

- 55 Ph.D. Student RAs (Avg Stipend: \$15,689 / year)
- 20 M.S. Student RAs (Avg Stipend: \$14,441 / year)

RESEARCH AWARDS ABOVE \$50,000 (FY19 Q1)

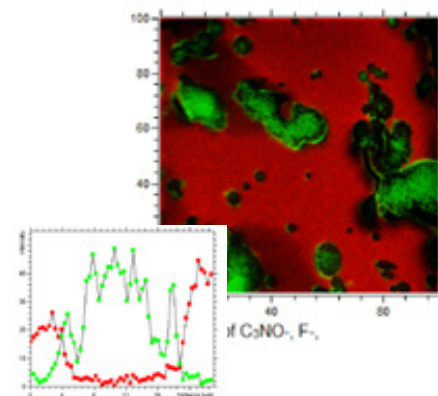
1. Roger Barker, Robert Ormond, \$1,273,360, Federal Emergency Management Agency
2. Wei Gao, Detlef Knappe, \$180,000, National Science Foundation
3. Harold Freeman, Ahmed El-Shafei, \$151,820, Malgorzata Szymczyk, Eastman Chemical Company
4. Philip Bradford, \$122,248, US Air Force - Office of Scientific Research
5. Emiel DenHartog, Roger Barker, \$97,684, Consortium for Outdoor Materials and Performance Ensembles Technology and Evaluation
6. Jesse Jur, Andre West, \$69,798, Advanced Functional Fabrics of America
7. Eunkyong Shim, Emiel DenHartog, \$50,000, The Nonwoven Institute

RESEARCH HIGHLIGHTS

Surface Energy Control for Alcohol Repellency and Electret Charge

Protection. In the field of electret air filter materials, media are embedded with charges in order to improve filter capture efficiency. Unfortunately, these charged filters are susceptible to charge loss when exposed to oils and alcohols. Professor Eunkyong Shim and her students aim to create highly repellent nonwoven media economically and to prevent electrostatic charge loss. The team has produced fluorochemical melt additive containing meltblown nonwovens, investigated additive migration process and additive distributions, and related them to alcohol repellency and charge retention of electret filter media. It was found that the associated increase in filtration efficiency due to electret charging can be protected through the use of alcohol repellent surfaces, and this is directly related to the surface fluorine content of the nonwoven media.

Additive distribution in fiber cross-sections



Protective Workwear for Agricultural Workers. Migrant farm workers are at increased risk of severe health issues due to lack of awareness about the effect of pesticides. Few policies exist to protect these workers. Professor Katherine Annett-Hitchcock and her students focused their efforts on creating garments that assist in protection from the pesticide Flumetralin, commonly used by tobacco farmers. A textile surface finish was applied to prevent the pesticide from penetrating the fabric and thereby preventing dermal absorption of the toxin. The second phase of the project was the design and building of a shirt and pants combination using functional and user-centered design elements. It was constructed from fabric with the applied surface finish to provide the intended user maximum coverage, movement, and breathability for daily work in the fields. The team, including students from the Social Innovation Fellows program, is preparing to test the feasibility of hemp as a garment substrate, and the issues raised through wear-testing with a migrant worker population in the field.