

Research Development Fund – Fall FY17 Cover Page

Proposal Title: Augmentation of Environmental Mass Spectrometry at Texas A&M

Lead contact: Anthony Knap, Geochemical and Environmental Research Group (GERG)
t.knap@tamu.edu (979) 651 3651

Key Participating units:

College of Agriculture and Life Sciences – Department of Wildlife and Fisheries Sciences, Department of Entomology

College of Geosciences – Berg Hughes Center, Geology, Oceanography, GERG

College of Veterinary Medicine and Biomedical Sciences - Veterinary Integrative Biosciences

Health Science Center School of Public Health – Environmental and Occupational Health

Key Team members: Anthony Knap, Terry Wade (Geochemical Environmental Research Group)
Piers Chapman, Gerado Gold-Bouchot (Oceanography)
Carlos Dengo (Berg Hughes Center)
Thomas Macdonald (Health Science Center)
Ivan Rusyn (Veterinary Medicine)
Jeffrey Tomberlin (Department of Entomology)
Miguel Mora (Department of Wildlife and Fisheries Sciences)

Anticipated Request Amount (\$): \$ 870,000

Executive summary:

This proposal is to strengthen the Organic Geochemistry activities at Texas A&M University by replacing a 20-year-old Fisons VG AutoSpec High Resolution Mass Spectrometer (HRMS) with a Thermo DFS High Resolution GC/MS, and by purchasing a GC Agilent Triple Quad MS (GC-MSTQ), which is presently on loan from Agilent. To our knowledge there are no similar instruments on the A&M campus. These upgrades will allow an increased sample throughput of the laboratory and increase the instrument availability for other collaborative University units. GERG, for the past 3 years has been providing analytical services in collaboration with the Vet School, School of Public Health, Berg Hughes Center of Geology and the College of Agriculture and Life Sciences (Entomology and Wildlife and Fisheries). GERG provides training to students and Faculty in these Departments who then analyze their samples with minimal supervision. GERG has an analytical group of PhD's, Post Docs, which are supported by a GC/MS team of 5 technicians who have on average over 25 years of service all funded through external grants and contracts. Maintaining the instrumentation for 30 years is proof that this model works.

The present HRMS is a workhorse for the analyses of Dioxins/Furans and PCB's in a variety of environmental samples. This brings collaboration from US Fish and Wildlife, Texas Department of State Health Services and the EPA to name a few. The EPA will only accept data from a HRMS so we are trading like for like but without the global search for spare parts, which mostly come from surplus instruments worldwide. A new instrument will lead to less down time, greater sensitivity, and more days available for A&M users and greater research opportunities such as the NIEH Superfund Program. GERG is well known for its petroleum geochemistry and the GC-MSTQS is allowing us to create new methods for biomarker analysis of environmental samples, which will transform petroleum discovery. Adding this capability with the new clumped isotope MS (CIMS) capability at the Stable Isotope Geosciences Facility (SIGF) would provide an unparalleled capability for petroleum geochemistry at A&M. We are working very closely with Geology and the Berg Hughes Center presently for the petroleum biomarker work. The acquisition of these two instruments will allow our present University collaborators named above as well as ensure the broad usage of the facility by both participating faculty and scientists around the campus.