**Hyperspectral Lambertian Equivalent Reflectance from marine plastics**

**Shungudzemwoyo P. Garaba and Heidi M. Dierssen**

Department of Marine Sciences, Avery Point Campus, University of Connecticut,

1080 Shennecosset Road, Groton, CT 06340, USA

 shungudzemwoyo.garaba@uconn.edu; heidi.dierssen@uconn.edu

**Abstract**

Plastic pollution is a widespread and persistent problem for benthic, pelagic and littoral marine environments. Reports suggest that 60-80 % of marine debris is from plastic products and such products can be ingested by a wide variety of marine organisms. Furthermore, large patches of debris have been reported in the North Pacific and North Atlantic gyres, in particular, yet the spatial extent and concentration of plastic products has not been quantified. Here, we investigate the potential to observe plastic products using ocean color remote sensing and proposed new sensor technology (e.g., PACE). Plastics possess distinct optical features in the near-infrared to the shortwave infrared spectrum that are used in automated industrial sorting of typical household plastic waste. We measured optical features of plastic samples using a hyperspectral field spectrometer over a wavelength range from 350 nm to 2500 nm. Measured Lambertian Equivalent Reflectance (*LER)* revealed spectral dips at 850, 1150, 1350 and 1700 nm. A sensitivity analysis will be conducted to evaluate the concentration of floating plastic products that can be detected using these spectral features. Implications of this research are also aimed towards establishing robust indices or approaches to discriminate plastic *LER* in ocean color information.