

### **Role of Organic Matter in Formation of Micritic Ooids from Channing Lake Beds; Rita Blanca Formation; Panhandle, Texas**

Weeks, Brittany L.<sup>1</sup>; Kirkland, Brenda L.<sup>1</sup>; Kirkland, Douglas W.<sup>2</sup>; Moiola, Richard J.<sup>3</sup>; Dewey, Chris P.<sup>1</sup>; Lynch, F. Leo<sup>1</sup>; Sellers, Cale B.<sup>1</sup> (1) Geosciences, Mississippi State University, Mississippi State, MS. (2) Geosciences, University of Texas - Dallas, Richardson, TX. (3) Sandstone Enterprises, Dallas, TX.

The role of organic matter in the formation of micritic ooids is documented using samples from a Pliocene/Pleistocene Lake Bed (Rita Blanca Formation, Ogallala Group) located 10 km west of Channing, in the Texas Panhandle. The ooid unit is directly overlain by intermittent stromatolites. Ooids, as well as abundant ostracodes, are present within the stromatolites, which, together with the geologic setting, suggest a depositional origin in a shallow, alkaline lake. The ooid nuclei include siliciclastic particles, and, rarely, ostracodes and micritic peloids. The siliciclastic particles, predominantly sub-angular to sub-rounded grains ranging from 0.001 mm to 0.62 mm in diameter, consist largely of quartz (89%), potassium feldspar (10%), and infrequently detrital zircons and volcanic rock fragments (1%). The ooid cortices consist of layers of micrite ranging from 0.005 mm to 0.20 mm in thickness. SEM images reveal organic textures, irregular ovoid particles (20 - 60 nm), fossilized ovoid bacteria, and locally abundant relict filaments interpreted as fossilized biofilm. Reflected light corroborates the organic-rich nature of inclusions in the micritic cortex. The inclusion-rich cortices are coated by smooth-surfaced meteoric cements. Approximately 10% of the ooids contain ostracodes (*Limnocythere* sp.) incorporated into their cortices, suggesting the ostracodes were trapped by organic mucilage. The presence of the organic textures and ostracode carapaces suggest that organic matter, possibly microbial mucilage, played a significant role in the formation of the ooids.