Chemical Stratigraphy of the basal Barnett Shale

John Green
Oklahoma State University – Boone Pickens School of Geology
Stillwater, Oklahoma
John.green@okstate.edu

The Barnett Shale of the Fort Worth Basin is the preeminent shale resource play in North America. As a result, numerous studies have been conducted on the Barnett as the play has developed. However, there is still much to be understood. One interval in particular, the basal Barnett, is the topic of ongoing studies to determine its significance to future Barnett production. The basal Barnett interval unconformably overlies Ordovician Carbonates, and is in turn overlain by less radioactive and more resistive Barnett Shale. One dataset that is missing from the current studies is a chemical stratigraphic model of the interval. A chemical stratigraphic model of the interval will give insight into the deposition and diagenetic processes the interval has underdone. Such information is critical both for exploration and reservoir development. For example, Potassium (K) and Thorium (Th) contents are indicators of clay-mineral abundance and composition, and thus good clues as to how the rock will behave when fractured. Therefore, knowing the burial history and chemical make-up of the interval will assist in determining the mechanical properties of the rock. As with all shale plays, knowing the mechanical properties of the rock is key when determining the value and role of the rock to production.