Dissolution experiments in halite cores: Initial findings

Milodowski, A.E.[1], Field, L.P.[1], B. Palumbo-Roe, B.[1], Hall, M.R.[2, 1], Parkes, D.[1] , Evans, D.[1]

[1] British Geological Survey, Environmental Science Centre, Keyworth, NG12 5GG

[2] University of Nottingham, Faculty of Engineering, University Park, Nottingham, NG7 2RD

The UK is in need of increased gas storage volumes to maintain a healthy balance between supply and demand, particularly with the envisaged increase over the next few decades in green technologies such as wind power. The best solution lies in constructing new underground facilities for compressed air energy storage (CAES), which most typically will be in specifically designed underground caverns. CAES is potentially possible in a number of lithogies, however, typically these are located in solution -mined salt (halite) caverns. The influence of the petrology and texture of the salt on the dissolution during the construction of salt caverns is not fully understood. We have carried out experiments on key end member salt lithologies from the Triassic Preesall salts to assess the key factors affecting dissolution within each lithology. Using a combination of X-ray CT, laser-stimulated scanning fluorescence, optical and scanning electron microscopy techniques, we present the initial results for a primary founded-mat lithology which indicates a strong control on dissolution is exerted by the location and quantity of more insoluble materials (e.g. clays, anhydrite and quartz inclusions) present within the salt core.