Formation damage takes place at the level of pores and pore throats.

The facilities at the NCPGG include clay separation lab, XRD for detailed clay analysis, thin section microscopy, including transmitted light, cathodoluminescence, fluorescence, high resolution scanning electron microscopy, electron microprobe and capillary pressure by mercury injection.

Current research interest:

- Understanding the controls on swelling behaviour in glaucony and other clays
- Oxidation through invasion of meteoric water modifies the clays and cements micropores with goethite
- Using NMR measurments to define effective porosity
- Prediction of permeability and effective porosity under different clay distribution patterns

Glaucony cemented sandstone, showing the effect of swelling clays on the distribution of pores and pore throats.

Expandable clays can cause severe damage to reservoir porosity and greatly reduce permeability.

Clay distribution influences permeability. Illite (left) replaces grains but illite and kaolin (right) fill porosity.

Fibrous and bladed illite greatly increases surface area and irreducible water. It can also act as a filter to collect mud and fines.