Scale Control in Oilfield Applications

Thomas Nagy, Emily DeTemple, Douglas Swartz

While the Northern Panhandle of West Virginia has a long history in the businesses of coal mining and steel production, advancing technologies have allowed hydraulic fracturing to arise as an effective method for extracting natural gas and oil in this area. Despite the abundance of natural gas deposits in the Marcellus Shale of northern West Virginia, using hydraulic fracturing to extract natural resources is not without its drawbacks. When HF flowback water moves through oilfield pipelines, it is highly saturated with metal cations from bedrock minerals which dissolved in solution during the fracturing process. These cations tend to precipitate out of solution as salts, therefore lining the insides of the pipes with scale and slowing the overall flow rate within the piping system. Since this issue can be very expensive to fix if not dealt with quickly, it is safer to simply avoid the chance of scale altogether by utilizing scale inhibitors. The goal of this experiment was to pre-treat the produced water with an oxidizer (Klear's organic-based peroxide 4035) to reduce the amount of metals in solution and then proceed to treat with scale inhibitor 5210 to reduce the scaling potential of any remaining metal cations.