Materials Degradation Immersed in Transformer Oil Due to Discharge

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Abstract. This study explores degradation processes of surface discharges on rock samples submerged in transformer oil. A DC high-voltage source, along with classical and modular pulse-forming Marx generators, was employed to initiate breakdowns. Current and voltage waveforms were analyzed to determine the energy involved in discharge events. Morphological alterations - such as micro-cracks and surface pits - were investigated through microscopic examination, revealing the effects of time application of surface discharge. The research provides an understanding of discharge behavior and its influence on the rock surfaces.