

9th World Congress on
Spectroscopy & Analytical Techniques

March 06-07, 2019 | Paris, France

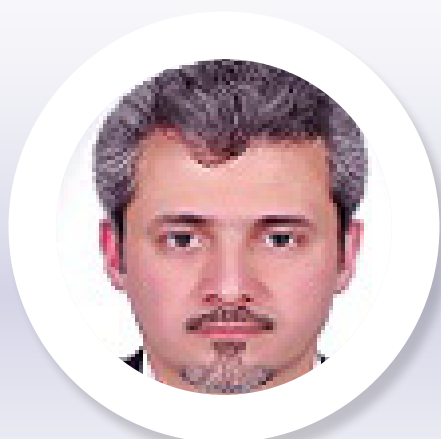
The minimum concentration of 1,2,3-benzotriazole to suppress sulfur corrosion of copper windings by DBDS in mineral transformer oils

The incubation criterion of the 62535 standard procedure of the International Electrochemical Commission (IEC) was modified to obtain the depletion profiles for different concentrations of each of 1,2,3-benzotriazol (BTA) and dibenzyl disulfide (DBDS) when both are present in a mineral oil matrix. Measurements on BTA concentrations ranging from 0 to of 70 mg L⁻¹ shows that its depletion profile after incubation for 72 h, at room temperature, and at 150°C in the presence and absence of a copper strip, is the same irrespective of the DBDS concentration. Similar measurements on DBDS at concentrations ranging from 10 to 300 mg L⁻¹ shows that identical depletion profiles are obtained as long as the BTA concentration is maintained in excess of 5 mg L⁻¹. The results show that a minimum BTA concentration of 5 mg L⁻¹ is needed to make the copper windings in contact with the mineral oil passive and in turn suppress their sulfur corrosion by DBDS.

Biography

Nemer Muhanna has completed his PhD from King Fahd University of Petroleum and Minerals. He is working as Analytical Sciences and Technology Scientist since 2014, in Sadara Chemical Company, one of the largest petrochemical plants ever built in the world and has experience in the analytical field of about 20 years. He published more than 25 papers in reputed journals in different fields like Industry, Analytical Chemistry, Theoretical Physics and Astrophysics. His research interests include: newly developed analytical methods to resolve environmental and petroleum related challenging sample matrices; additives and oxidation stability in petroleum products; Water Chemistry; Environmental Chemistry; Spectrochemical Analysis; Thermochemistry and; Astrophysics.

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