"Long Term Aging and Service Life Prediction of Performance Polymers"

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Abstract:

In many polymer applications, it is important and valuable to predict the service life of its products because of the high cost of premature failure in actual end use. So, it is of great interest to understand long term aging mechanisms and performance, and to study the correlation between the changes in polymer properties and its application performance for providing predictive modeling.

The prediction results have shown significant variations depending on the performance and degradation properties that were selected. This seminar will describe the proposed long-term aging mechanisms based on the physical characteristics, e.g. amorphous, semi-crystalline, etc. of the polymers or their blends/composites, and then, outline the important approaches for service life prediction (SLP) of polymeric products, and focus on recent developments in modeling for SLP using the case of polymer application in non-metallic cable insulation by developing the direct correlation between the weight loss and electrical performance, e.g. voltage breakdown strength as a function of temperature. The future challenges for SLP of polymeric products will also be addressed.