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Study of Rubber Composites with Positron Doppler Broadening Spectroscopy: Consideration of Counting Rate CHUN YANG[1], Centenary College, C.A. QUARLES, Texas Christian University — We have used positron Doppler Broadening Spectroscopy (DBS) to investigate the uniformity of rubber-carbon black composite samples. The amount of carbon black added to a rubber sample is characterized by phr, the number of grams of carbon black per hundred grams of rubber. Typical concentrations in rubber tires are 50 phr. It has been shown that the S parameter measured by DBS depends on the phr of the sample, so the variation in carbon black concentration can be easily measured to 0.5 phr. In doing the experiments we observed a dependence of the S parameter on small variation in the counting rate or deadtime. By carefully calibrating this deadtime correction we can significantly reduce the experimental run time and thus make faster determination of the uniformity of extended samples.

[1]participant in TCU REU program, summer 2007, funded by NSF Grant 0453577

Carroll Quarles
Texas Christian University

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