

Coupled physical analyses of Carbon-Black/EPDM elastomers

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We studied Carbon Black/EDPM elastomers with different physical methods, characterizing the mechanical, electrical and multi-scaled structural properties (SAXS/WAXS) simultaneously on D2AM beamline at ESRF.

In oligo-cyclic experiments, electrical measurements can be used to monitor the anisotropic reorganization of the percolating conducting CB network during tensile testing.

For longer term experiments, the evolution of the conductivity can also be considered as a probe to monitor the damage, under conditions of use, of such nanocomposite elastomers.

Thus, a fine characterization of electrical properties of CB/EPDM elastomers could be valuable tool to evaluate the structural state of the CB network and provide guidelines for an optimal maintenance.