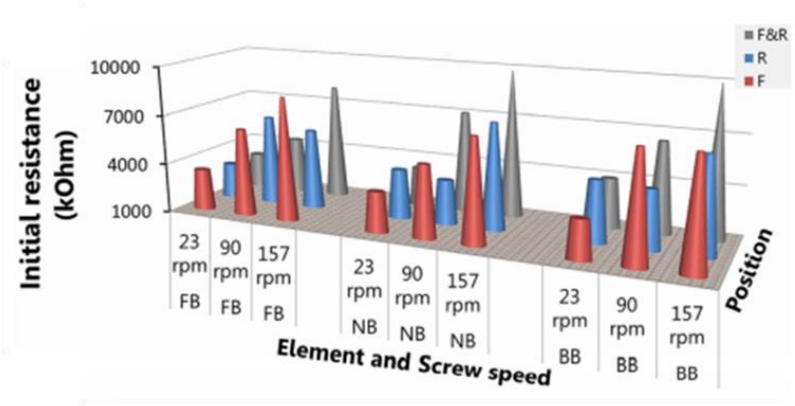
Properties of Piezoresistive Elastomeric Composites: Simultaneous Effects of Extrusion Parameters

Piezoresistive composites possess piezoresistive sensing (i.e., the responsiveness of electrical resistance to the deformation), and are widely used as strain sensors. In the study, flexible conductive rubber composites based on styrene-butadiene rubber (SBR) are of interest. The composites filled with carbon black are prepared in a twin-screw extruder. The simultaneous effects of the twin-screw extrusion parameters (i.e., kneading element, dispersing position, and screw speed) on the physico-electrical properties of the conductive rubber composites are reported and discussed. Many methods of adjusting the composites to be more suitable for the strain sensor application, in terms of not only piezoresistive performance but also mechanical strength, are established.

This project was funded by the Thailand Research Fund (TRF) through the Research and Researchers for Industries and Chareon Tut Co., Ltd. (grant PHD58I0011). The research was conducted mainly at the Rubber Technology Research Centre, Faculty of Science, Mahidol University, and collaborated with the National Metal and Materials Technology Center (MTEC). Associated SDG goal is Industry, innovation and infrastructure (9).



Reference:

J. Narongthong, P. Sae-Oui, M. Nillawong, **C. Sirisinha**, Physico-Electrical Properties and Piezoresistive Sensing Of The Extrusion-Based Conductive Rubber Composites: The Simultaneous Effects Of The Extrusion Parameters, Rubber Chemistry and Technology, https://doi/10.5254/rct.20.80392, 20 Feb. 2020.