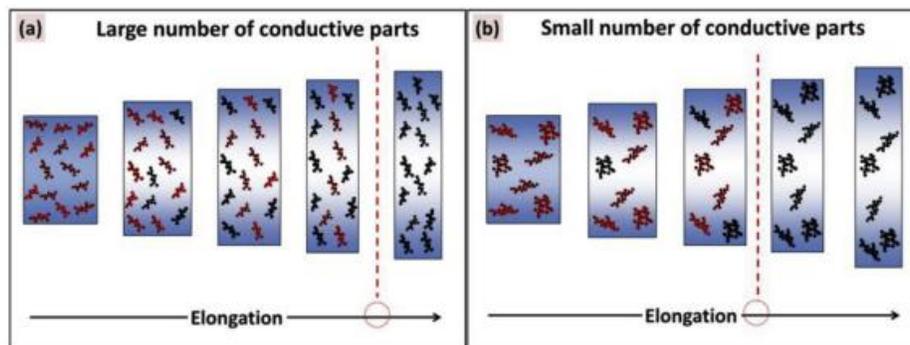


Conductive Polymer Composites for Small-Strain Sensors and Stretchable Conductors

Conductive polymer composites (CPCs) have been used in various applications depending on how they respond to external stimuli. In applications involving changes in strain (tension), the CPCs can be used as either strain sensors or stretchable conductors. For strain sensors, an extensive response to the change in strain is required. Moreover, to be suitable for flexible applications, the CPCs must possess high flexibility and/or stretchability. In this study, conductive carbon black (CB) filled styrene-butadiene rubber composites with tunable electrical-strain behavior are prepared using ionic liquid. The addition of ionic liquid is also capable of improving electrical conductivity and flexibility, thus, enabling use in applications such as small-strain sensors and stretchable conductors.

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Schematic representation of the rotation and alignment of the aggregates/agglomerates with various elongations at (a) large and (b) small numbers of conductive components.

Reference:

J. Narongthong, H. Le, A. Das, **C. Sirisinha**, S. Wießner, Ionic liquid enabled electrical-strain tuning capability of carbon black based conductive polymer composites for small-strain sensors and stretchable conductors, *Composites Science and Technology*, 174, 202–211, 2019.