Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

How conductive polymer/nano-conductive filler composites can be? SUPING LYU, DARREL UNTEREKER, JAMES SCHLEY, Medtronic Corporate Science and Technology — How conductive can polymer/filler composites be? It was thought the conductivity of composites could be increased by reducing the sizes of the fillers or increasing their aspect ratios, for example, by using carbon nanotubes. Invention of numerous conductive nanomaterials provides opportunity to verify this idea and to achieve higher conductivity. However, the highest conductivity of composites achieved was just a few percents of that of bulk materials of the fillers, regardless whether the filler was silver micron particles, platinum nano particles, carbon nano particles, or carbon nano tubes. The conductivity of filler-based composite is intrinsically limited by the micro-contact between the conductive fillers. Reducing the filler size or increasing aspect ratio did not yield significant improvements in conductivity although percolation may occur earlier.

SuPing Lyu
Medtronic Corporate Science and Technology

Date submitted: 20 Nov 2006 Electronic form version 1.4