DREXEL UNIVERSITY
Materials Science and Engineering
College of Engineering

Department of Materials Science and Engineering
PhD Candidacy Exam
24th May 2022
11am-1pm EDT
drexel.zoom.us/j/7643698135

Wearable Supercapacitors: State-of-the-art

Tetiana Hryhorchuk
Advisor: Yury Gogotsi

Abstract

Wearable electronics and the internet of things (IoT) promise interconnectivity with the implementation of electronic applications that will improve safety of workers, and effectiveness of health monitoring, to name a few. Many of these applications will require flexible devices, increasing demand for wearable energy storage solutions. Two-dimensional (2D) transition metal carbides and nitrides called MXenes, offer unique charge storage properties and high solution processability that is promising for flexible energy storage and e-textiles technologies. Although enormous amount of work has been done on developing wearable supercapacitors, majority of articles show relatively low energy values. Both high voltage and high energy is important for powering programmable electronics especially in case when collecting data on various types of sensing. In this work, we will highlight most recent state-of-the art data on MXene wearable textile supercapacitors demonstrating high-energy characteristics and will analyse what were the key factors in achieving excellent performance on a case-to-case basis.