The thermal conversion technologies that STEEL currently focuses on are: (i) polymer-based thermoelectrics, (ii) thermoelectro-chemical converters, specifically sodium ion heat engines and redox flow coolers, (iii) mass manufacturable thermoelectric technologies, and (iv) betavoltaic energy converters. The thermal transport technologies that STEEL currently focuses on include optothermal and electrothermal techniques primarily used for in-plane and through-plane polymer thermal conductivity measurements. Prof. Yee also co-directs the Heat Lab, which aspires to be the global center of excellence in thermal measurements, simulations, and innovation. The Heat Lab is a user facility training graduate students in a suite a thermal property measurement techniques and providing thermal expertise to solve pressing thermal problems facing industry. This seminar is structured as a choose-your-own-adventure across numerous topics based on audience interest. The underlying motivation across these topics stems from global electrification, global cooling, and electrifying transportation. The most popular topics cover: (a) air-stable metal-coordinated n-type polymer thermoelectrics, a best in-class n-type polymer thermoelectrics, (b) thermal transport in amorphous polymers, empirical observations of propogons and diffusons, and (c) thermoelectric and thermo-electrochemical converters, opportunities for improved generator and cooler efficiency.

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