Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.


**Supporting Information**

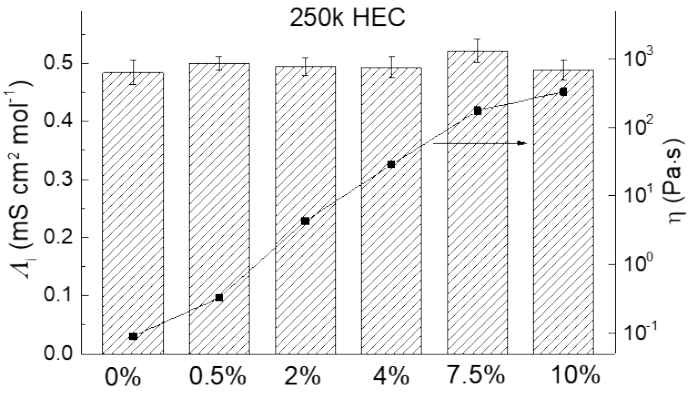


Figure S1. The molar conductivity and viscosity of EMIM ES contains increasing amount of HEC 250k.

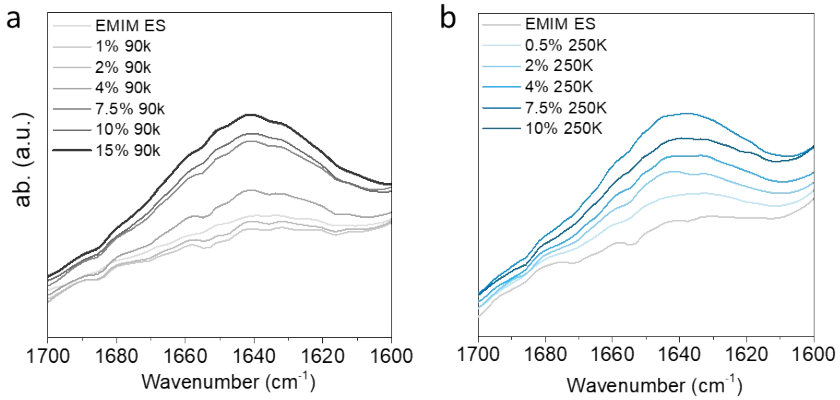


Figure S2. The OH bending peak of EMIM ES increasing amount of (a) HEC 90k and (b) HEC 250k.

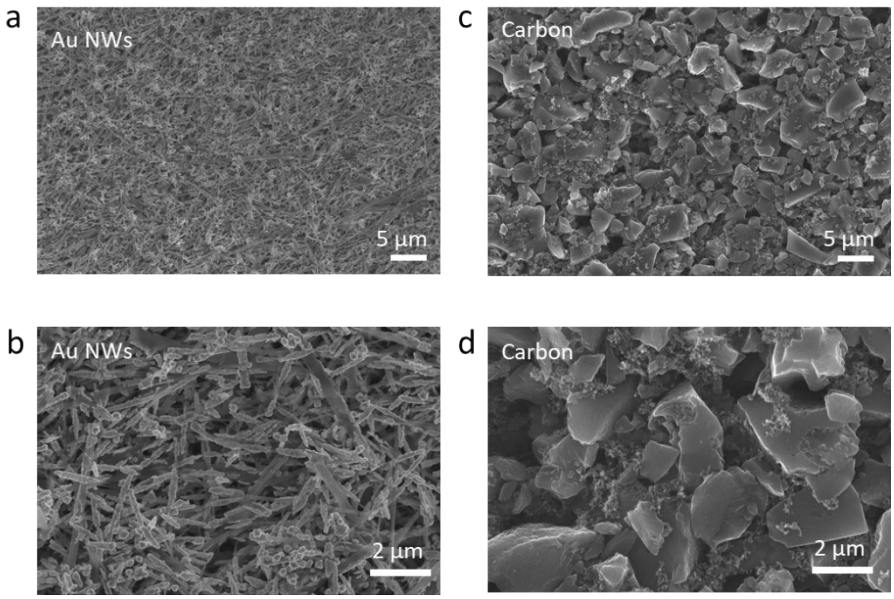


Figure S3. The SEM images of a) and b) Au NWs and c) and d) carbon electrodes.

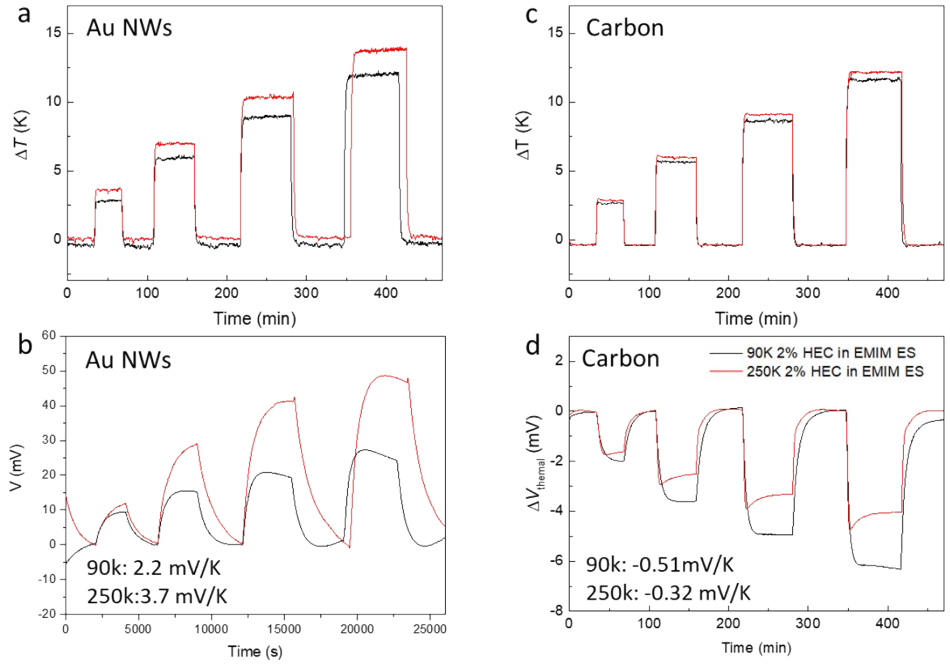


Figure S4. a) and b) The temperature difference variation and c) and d) the corresponding thermal voltage of devices composed of Au NWs and active carbon electrodes and EMIM ES/HEC electrolytes.

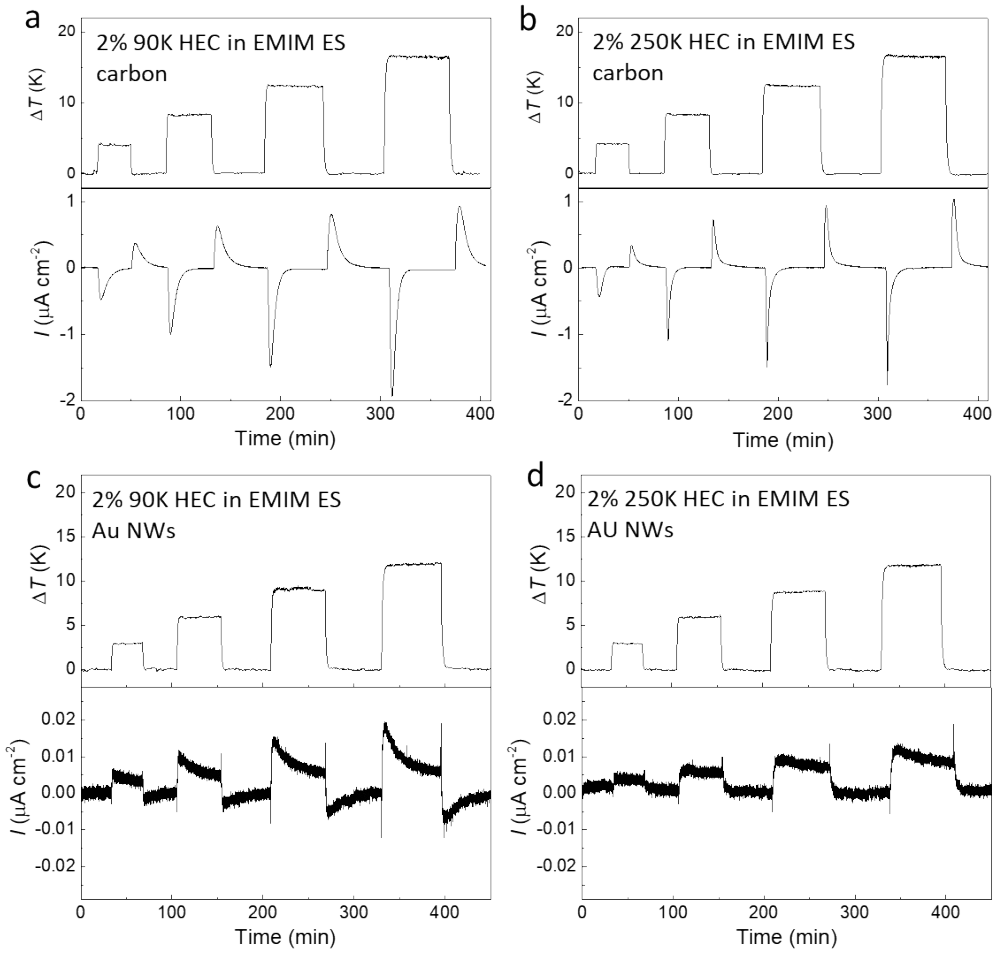


Figure S5. The current of different devices when applying temperature difference.

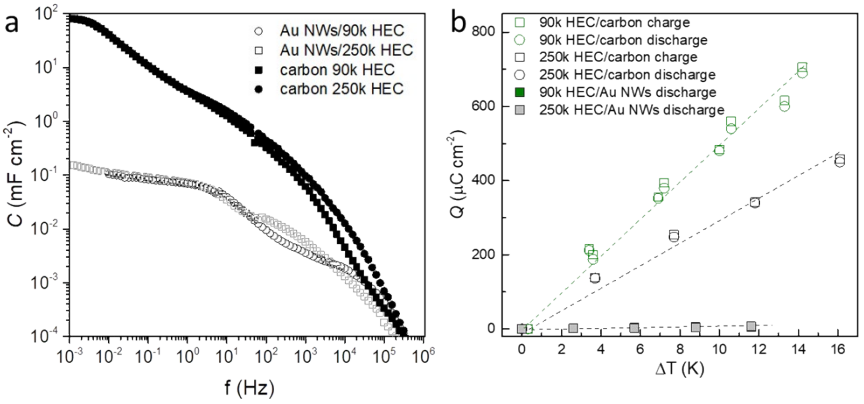


Figure S6. The comparison of different devices when applying temperature difference. a) capacitance and b) transferred charge.

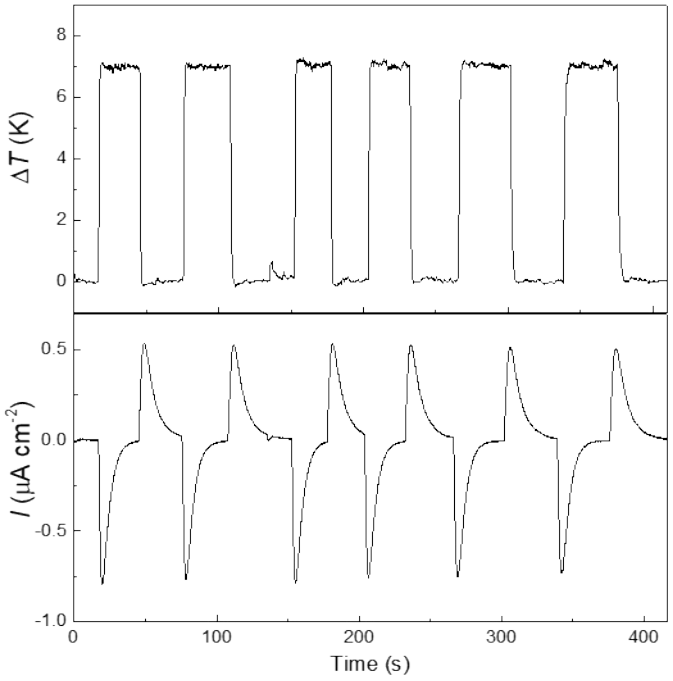


Figure S7. The demonstration of AC current generating from ionic thermoelectric devices composed of active carbon electrodes and EMIM ES/HEC 90k, the $R_{load}$= 1000 Ω.