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Excellent high temperature field emission behaviors with ultra-low turn-on field and reliable current emission stability from SiC@SiO_2@Graphene nanoarray emitters

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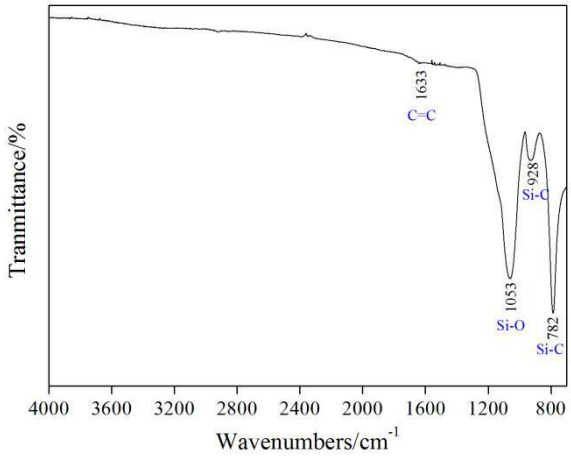

Figure S1

In Figure S1, an absorption and a shoulder peak at 782 cm^{-1} and 928 cm^{-1} is indicated as the transversal optic (TO) mode (Si-C stretching vibration) and the longitudinal optic (LO) vibration of SiC respectively. The peak at 1053 cm^{-1} is assigned to the asymmetric of Si-O stretching vibration of the intermediate amorphous SiO_2. The weak absorption peak around 1633 cm^{-1} is stemmed from the telescopic vibration of C=C.

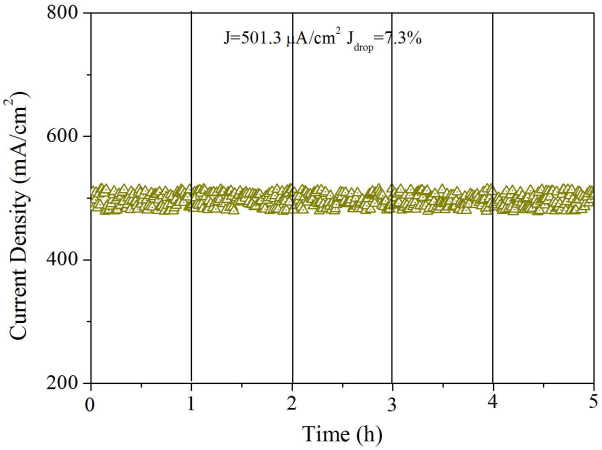

Figure S2

The stability of the as-synthesized SiC@SiO_2@Graphene nanoarrays at optimal temperature (500 °C) has been evaluated by keeping a current density at 501.3 μA/cm^2 over 5 h, as shown in Figure S2. In order to protect the testing equipment, the measurement time has been divided into five isolated segments. It can be clearly observed that the emission current fluctuation of the sample is approximately 7.3%, revealing its reliable current emission stability as a good candidate emitter.