Supplementary Information

Electrical Charge-Induced Selective Ion Permeation in HfO_2/Porous Nickel Silicide Hierarchical Structures

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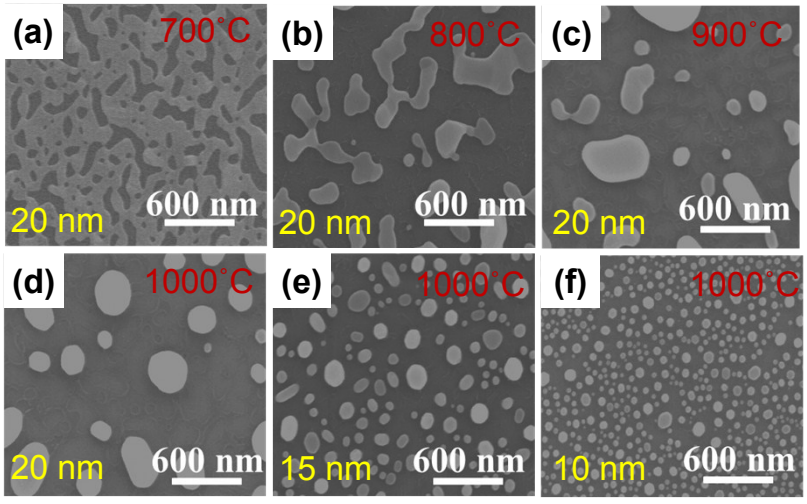

Figure S1 (a-f) SEM images of annealed Au thin films on p-Si substrate at different conditions for formation of Au NP arrays.

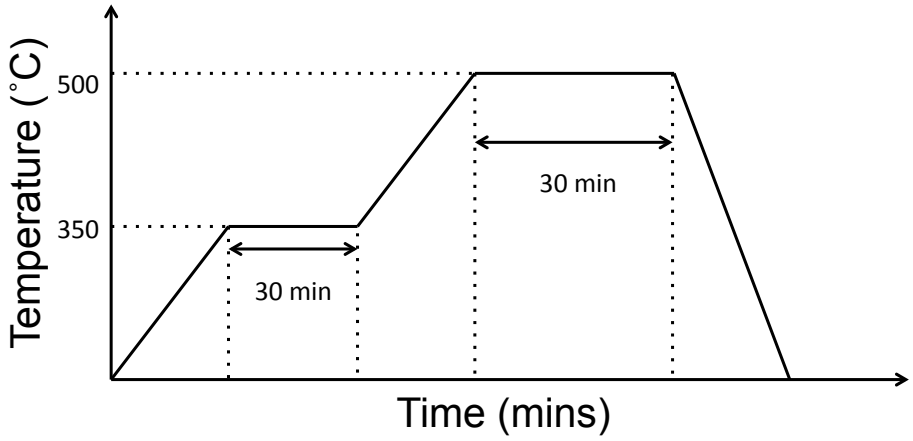

Figure S2 Heating profile for the formation of the NiSi conductive phase on Ni/porous Si structures.

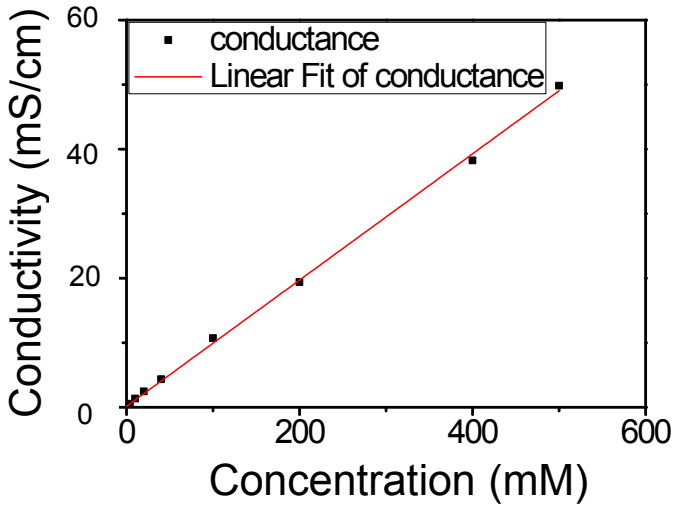

Figure S3 Calibration of electrolyte conductivity versus salt concentration.

Flexural strength of porous NiSi and AAO membranes by three-point flexural test

In general, the flexural strength of single crystalline silicon dice is about 300-900 MPa, varied the different dimension and orientation of crystals. Our experimental results as shown in Table 1 revealed a lower flexural strength of PNiSi materials due to the high porosity of PSi structures. However, it still appears improvement of flexural strength of membrane materials once porous NiSi structures were used.