Electronic supplementary information

for

Synthesis and Electrochemical Properties of Low-crystalline Iron Silicate Derived from Reed Leaves as a Supercapacitor Electrode Material

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Figure S1

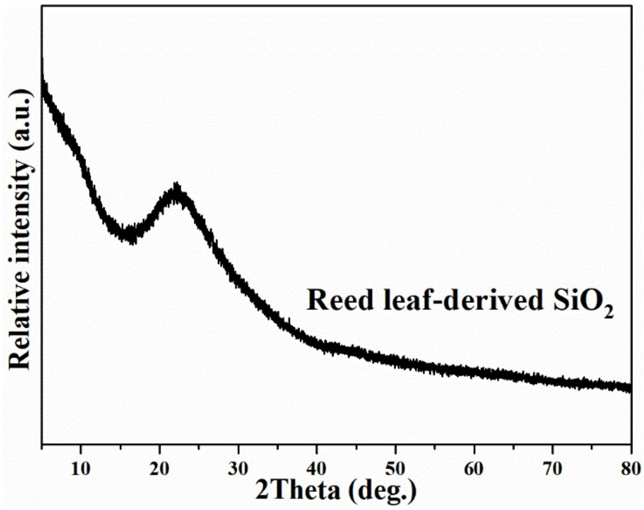

Figure S1. XRD pattern of SiO_2 derived from reed leaves.

Figure S2

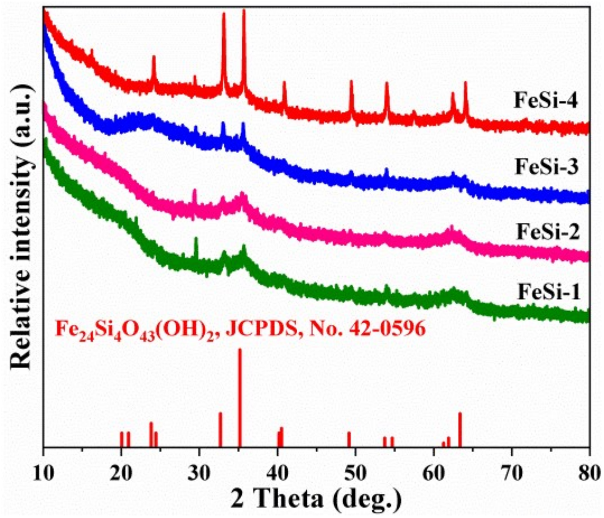

Figure S2. XRD pattern of FeSi 1-4

Figure S3

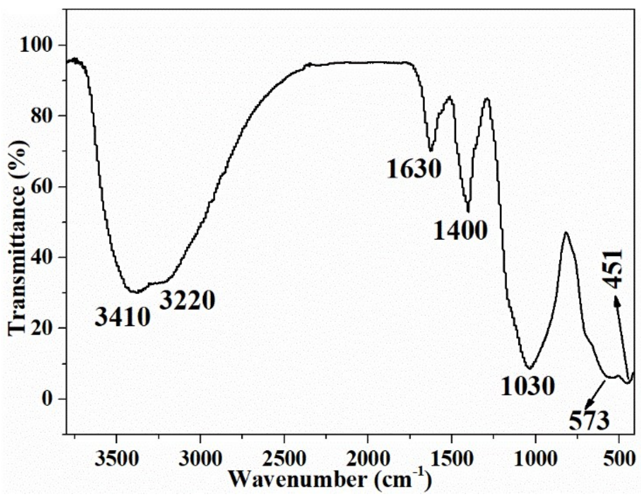

Figure S3. The FTIR spectrum of FeSi.

Figure S4

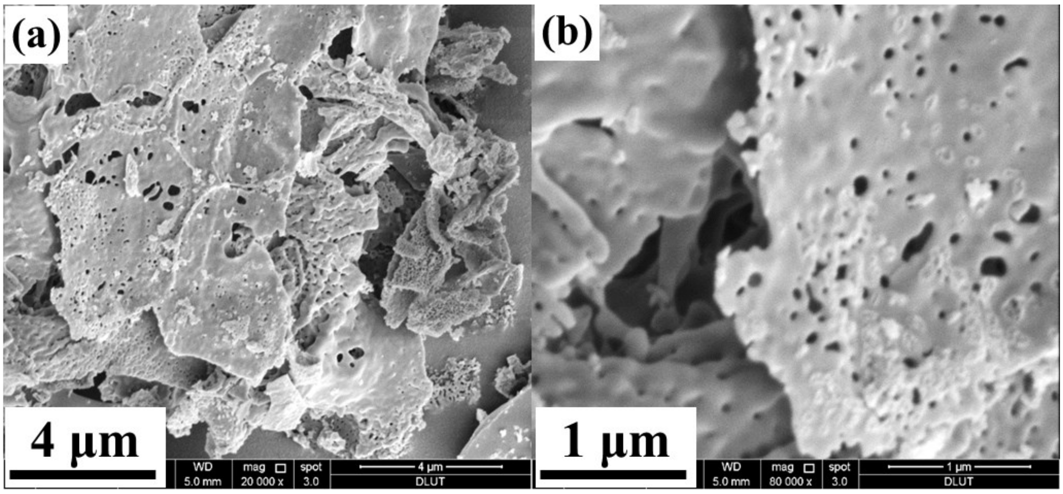

Figure S4. FE-SEM images of SiO_2 derived from reed leaves.

Figure S5

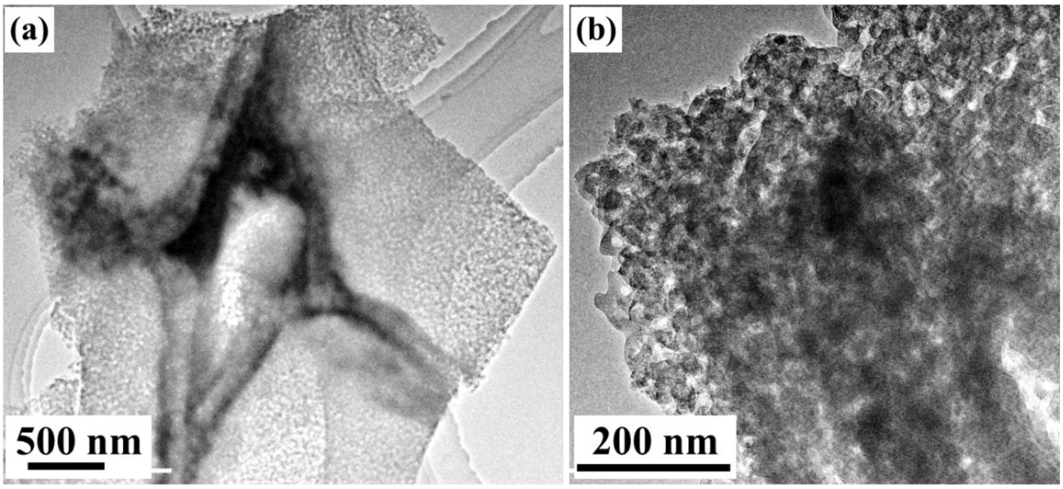

Figure S5. TEM images of SiO_2 derived from reed leaves.

Figure S6

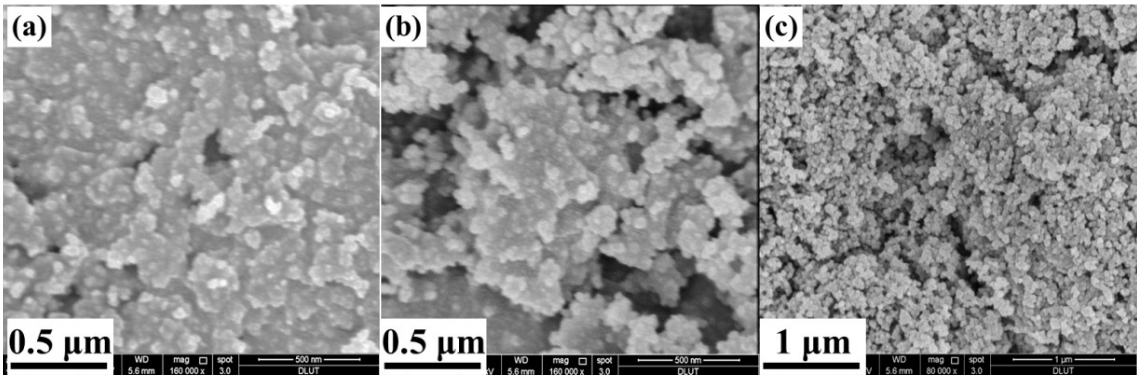

Figure S6. FE-SEM images of FeSi-1 (a), FeSi-2 (b), FeSi-4 (c)

Figure S7

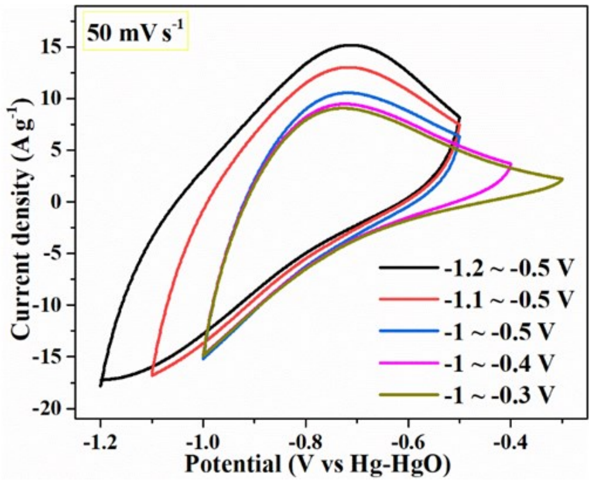

Figure S7. CV curves of FeSi in different voltage windows at 50 mV·s^{-1}

Figure S8

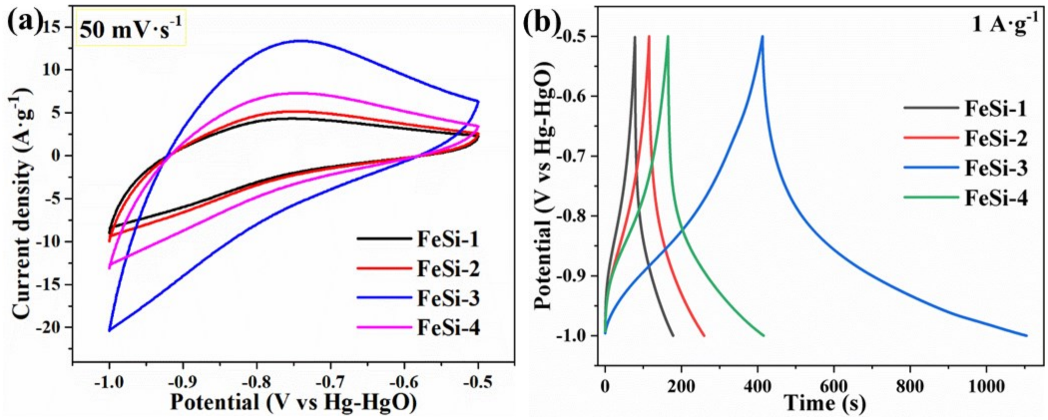

Figure S8. (a) CV curves of FeSi-1~4 at 50 mV·s^{-1}; (b) GCD curves of FeSi-1~4 at 1 A·g^{-1}.

Figure S9

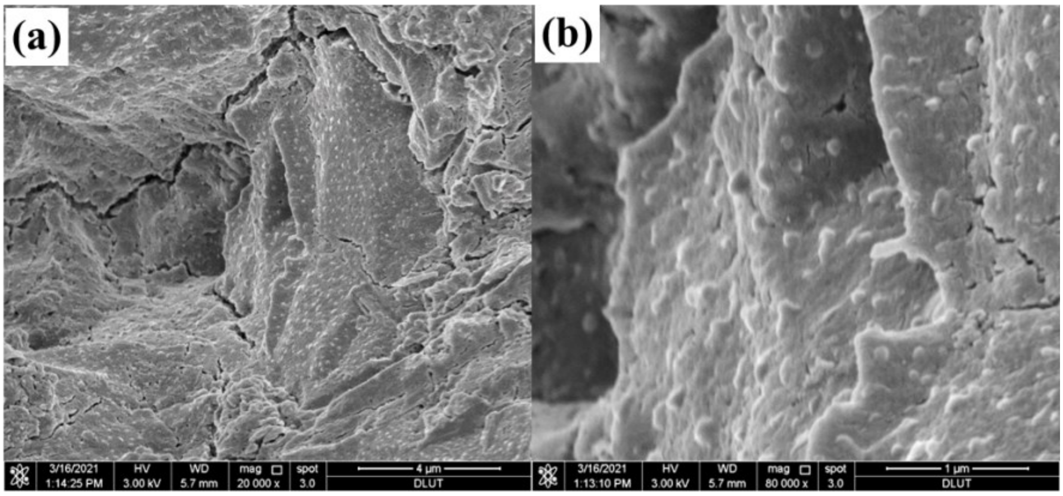

Figure S9. FE-SEM images of the FeSi electrode after 10000 cycles.

Figure S10

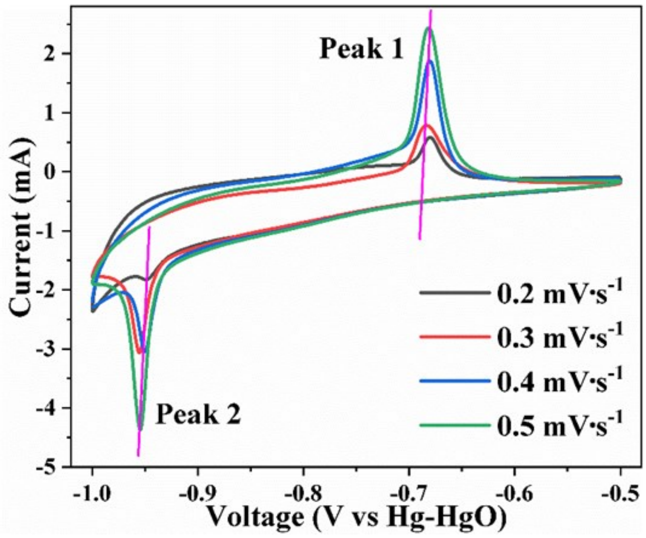

Figure S10. CV curves of FeSi at different scan rates from 0.2 to 0.5 mV·s^{-1}.

Table S1

Table S1. Comparison of the electrochemical performance between FeSi and the reported silicate−based material

Silicate-based materials	Electrolyte	Potential /V	Capacitance	Cycle	Ref.
in situ CNT/nanoclay/PANI	1 M KCl	0~0.8	331 F g^{-1}, 10 mV·s^{-1}	92%, 2000 cycles	1
ex situ CNT/nanoclay/PANI	1 M KCl	0~0.8	202 F g^{-1}, 10 mV·s^{-1}	92%, 2000 cycles	1
$Co_xNi_{3-x}Si_2O_5(OH)_4$/C	3 M KOH	−0.8~0.6	226 F·g^{-1}, 0.5 A·g^{-1}	99%, 10000 cycles	2
C-zinc silicate	3 M KOH	−1~−0.3	450 mF·cm^{-2}, 5 mV·s^{-1}	83%, 10000 cycles	3
$Ni_3Si_2O_5(OH)_4$	3 M KOH	−0.1~-0.3	132.4 F·g^{-1}, 0.5 A·g^{-1}	100%, 10000 cycles	4
C-MnSi	3 M KOH	−0.1~0.55	511 F·g^{-1}, 0.5 A g^{-1}	84%, 10000 cycles	5
Co_2SiO_4	3 M KOH	0~0.5	453 F·g^{-1}, 0.5 A·g^{-1}	89%, 10000 cycles	6
$MnSiO_3$	3 M KOH	−0.5~0.2	517 F·g^{-1}, 0.5 A·g^{-1}	34%, 10000 cycles	6
$Ni_3Si_2O_5(OH)_4$	3 M KOH	0~0.6	67 F·g^{-1}, 0.5 A·g^{-1}	44%, 10000 cycles	6
CoSi NBs@MnO2	3 M KOH	-0.5~0.6	490.5 F·g^{-1}, 1 A·g^{-1}	80%， 5000 cycles	7
CSO NN/RGO	3 M KOH	−0.1~0.55	483 F·g^{-1}, 0.5 A·g^{-1}	58%, 10000 cycles	8
e-CoSi-3	6 M KOH	0~0.5	267 F·g^{-1} ,1 A·g^{-1}	90%, 10000 cycles	9
e-NiSi-3	6 M KOH	0~0.5	272 F·g^{-1} ,1 A·g^{-1}	96%, 10000 cycles	9
e-MnSi-3	6 M KOH	0~0.5	439 F·g^{-1} ,1 A·g^{-1}	80%, 10000 cycles	9
C/$Co_3Si_2O_5(OH)_4$	3 M KOH	−0.05~0.4	1600 F g^{-1}, 1 A·g^{-1}	91%, 6000 cycles	10
$Ni_3Si_2O_5(OH)_4$/GO	3 M KOH	0.1~0.55	165 F·g^{-1}, 0.5 A·g^{-1}	84%, 5000 cycles	11
nt-MnSiO3/rGO	3 M KOH	-0.6~0.6	860 F·g^{-1}, 0.5 A·g^{-1}	80%, 5000 cycles	12
(Ni, Co)$_3Si_2O_5(OH)_4$	1 M KOH	0-0.5	144 F·g^{-1},1 A·g^{-1}	99%,10000 cycles	13
$MnSiO_3$/MWCNTs	1 M Na_2SO_4	-0.2-0.8	236 F·g^{-1},0.5 A·g^{-1}	41%,1000 cycles	14
CoSi hollow sphere	3 M KOH	0-0.5	452.8 F g^{-1}, 0.5 A g^{-1}	89%, 10,000 cycles	15
NiSi hollow sphere	3 M KOH	0-0.6	66.7 F g^{-1}, 0.5 A g^{-1}	44%, 5000 cycles	15
CoNiSi/C	3 M KOH	−0.8~0.6	226 F·g^{-1}, 0.5 A·g^{-1}	99%, 10000 cycles	16
MnSiOx/C	3 M KOH	−1~−0.3	162 F·g^{-1}, 0.5 A·g^{-1}	85%, 10000 cycles	17
CoSi NBs@MnO_2	3 M KOH	−0.5~0.6	490.4 F·g^{-1}, 1.0 A·g^{-1}	45%, 5000 cycles	18
Mn_3O_4 doped MnSi/C	3 M KOH	−0.9~0.4	108 F·g^{-1}, 1 A·g^{-1}	82%, 8400 cycles	19
NiSi-$Ni(OH)_2$	3 M KOH	0.1~0.6	476 F·g^{-1}, 2 A·g^{-1}	103%, 10000 cycles	20
Co_2SiO_4@$Ni(OH)_2$	3 M KOH	−0.1~0.55	1101 F·g^{-1}, 1.0 A·g^{-1}	46%, 4000 cycles	21
$Co_3(Si_2O_5)_2(OH)_2$	6 M KOH	0.1–0.55	237F·g^{-1}, 5.7 mA·cm^{-2}	95%, 150 cycles	22
$Ni_3Si_2O_5(OH)_4$	6 M KOH	0~0.5	887 F·g^{-1}, 0.7 A·g^{-1}	97%, 2000 cycles	23
Mesoporous-Li_2MnSiO_4	2 M KOH	0~0.55	150 F·g^{-1}, 0.5 A·g^{-1}	86%, 500 cycles	24
Manganese silicate drapes	1 M KOH	−0.5~0.4	283 F·g^{-1}, 0.5 A·g^{-1}	75%, 1000 cycles	25
$Ni_3Si_2O_5(OH)_4$ spheres	2 M KOH	0.2~0.6	138 F·g^{-1}, 1 A·g^{-1}	–	26
$MnSiO_3$	6 M KOH	0.2~0.6	251 F·g^{-1}, 0.6 A·g^{-1}	–	27
FeSi	3 M KOH	-1~-0.5	575 F·g^{-1}, 0.5 A·g^{-1}	76%, 10000 cycles	This work

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