



F_2F_3 31, 33. $F_2F_5 \cdot H_2$ / G 37, IB. H 41. $F_2F_3 \cdot H_2$ / G 35, $F_2F_5 \cdot H_2$ / G 36. C 38, 39, 40. 42. F_2F_3 43, 44. I. 45, 47. I. 48, 49. A. 50. (C). 51, 53. 54, 55. F. 568 A₁ 100 A₁ 100. 474.0 A₁ 1 66.7 A₁ 50. 57. A. 58, 59. $F_2F_3 \cdot 0.33H_2$ / C. $F_2F_3 \cdot 0.33H_2$ / C. $F_2F_3 \cdot 0.33H_2$ / C. $F_2F_3 \cdot 0.33H_2$ / C. 60.

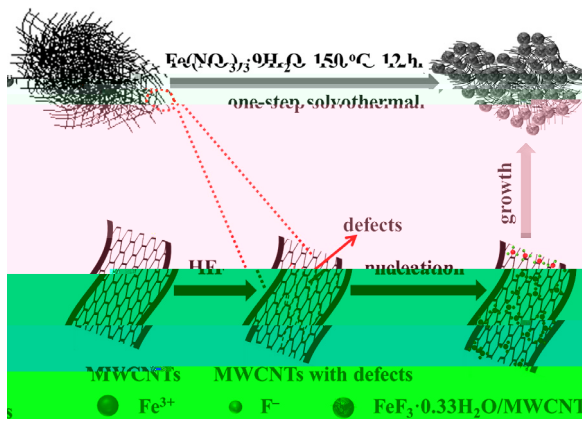
2. Experimental

$F_2F_3 \cdot 0.33H_2$ / C. H_2 4.

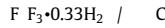
K 4. (HF) (III). $(F_2)_3 \cdot 9H_2$. 120. C. 10% $F_2F_3 \cdot 0.33H_2$. 50 L. 1.0 L HF. 100 L. 1. $F_2F_3 \cdot 0.33H_2$. 2.02. $(F_2)_3 \cdot 9H_2$. 20. 150 °C. 12. 80 °C. 12. $F_2F_3 \cdot 0.33H_2$ / C. D/ -3C. $(\lambda = 1.542 \text{ \AA})$. 40 A. 40. 4°. 10°. 80° (2θ). F I. (F I). (E, JE L J -6610L). (E, JE L JE -2100F). (BE). (II 3020, A). B J H (BJH). (DF). 80:10:10. 10. 110 °C. $F_2F_3 \cdot 0.33H_2$ / C. (GF/D). (C). F. 1. L¹. C₄. 1. IB. (, C). 1.0 4.0 (+/). A.

3. Results and discussion

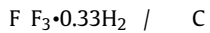
1. $F_2F_3 \cdot 0.33H_2$ / C. C. HF. C. F³⁺. $F_2F_3 \cdot 3H_2$. 61. A. H.



Scheme 1.



62 64 .
 F 3+
 y. A
 F Fe₃O₄
 24 .
 y C
 D
 F . 1(). I
 30°,
 $2\theta = 13.8^\circ, 23.6^\circ, 27.8^\circ$
 (1 1 0), (0 0 2) (2 2 0)
 F Fe₃O₄ (JC D . 76-1262). I
 (H B) F Fe₃O₄ (F . 1())
 y. B
 +
 , H B-F Fe₃O₄
 +.
 C



F . 2().

1343 1580 1

(G), y. A (D)
 1612 1
 66 . y. D/G F Fe₃O₄ / C D'
 (1.80) C (1.62). D/G
 F Fe₃O₄
 C 67 . F-I (F . 2())
 C , F Fe₃O₄ F Fe₃O₄ / C -
 F Fe₃O₄
 y C . 1620 1
 H H y F Fe₃O₄ .
 y 530 1
 F F F Fe₃O₄ .
 1111 1 F Fe₃O₄ / C ,
 C F
 68 . y y F Fe₃O₄
 y C .

y E . A F . 3(), C . A
 F . 3(), F Fe₃O₄
 y F Fe₃O₄ 800 . B ,
 F Fe₃O₄
 F Fe₃O₄
 60 .

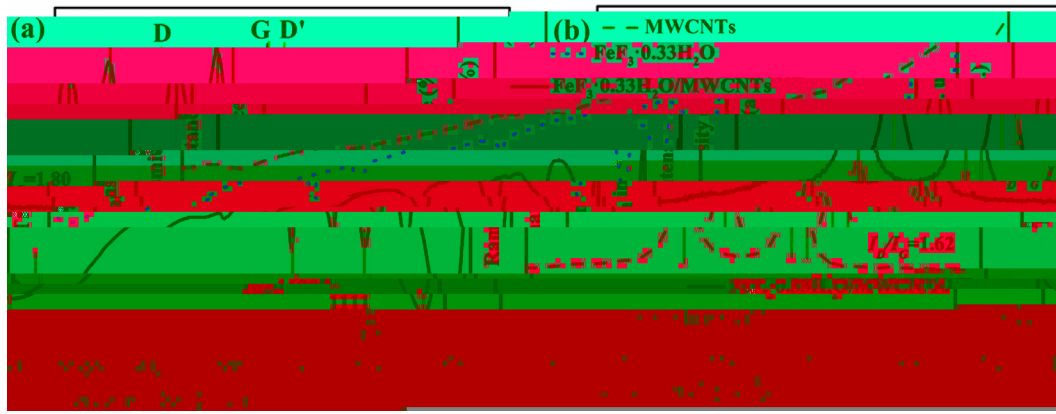


Fig. 2. (a) EDS line scan of FeF₃·0.33H₂O/MWCNTs. (b) Elemental mapping of FeF₃·0.33H₂O/MWCNTs. The ratio of Fe/F = 1.62.

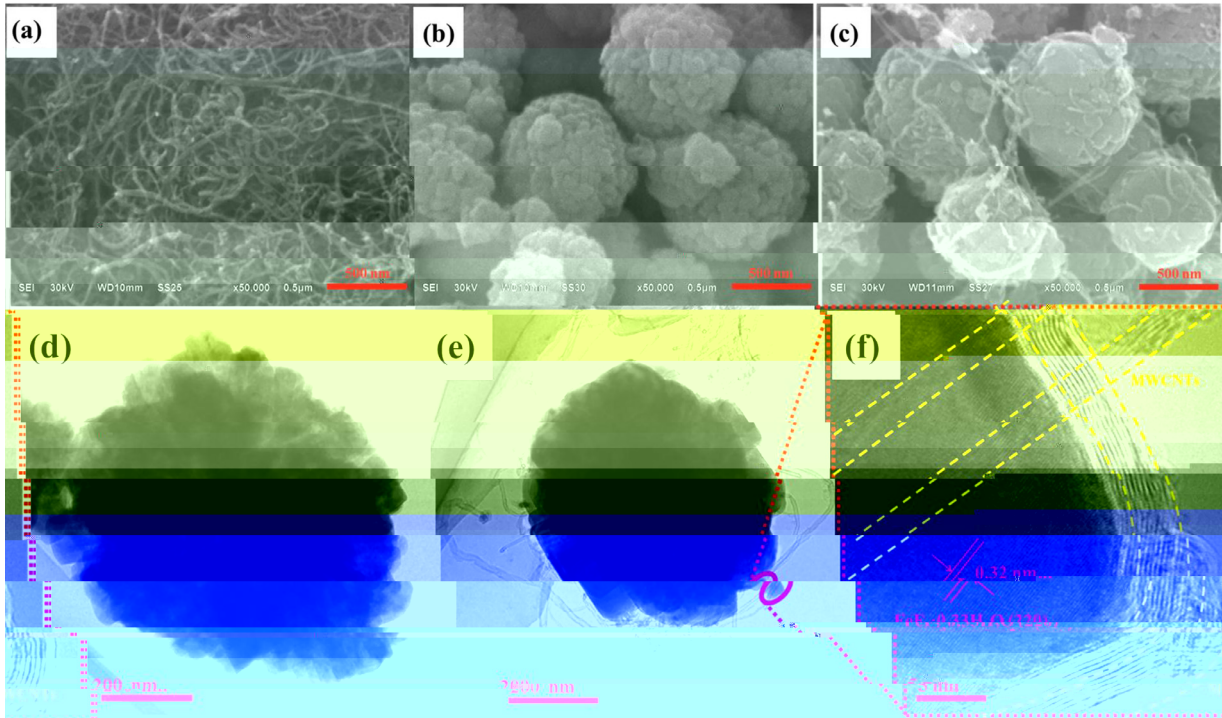


Fig. 3. (a) SEM image of FeF₃·0.33H₂O. (b) SEM image of FeF₃·0.33H₂O/MWCNTs. (c) SEM image of MWCNTs. (d) TEM image of FeF₃·0.33H₂O. (e) TEM image of FeF₃·0.33H₂O/MWCNTs. (f) HRTEM image of FeF₃·0.33H₂O/MWCNTs showing lattice fringes with a spacing of 0.32 nm.

Table 1.

	FeF ₃ ·0.33H ₂ O	FeF ₃ ·0.33H ₂ O / C
BE	33	45
BJH	0.067	0.18
	8.4	14.9

FeF₃·0.33H₂O / C, BJH, 0.067, 8.4, 14.9, 70, 71, 0.1, C (1, C = 237, A¹), 1.0, 4.0, 50, FeF₃·0.33H₂O / C, 10, 123.5, A¹, 50, BJH, 50, A, 350.4, A¹, 5, FeF₃·0.33H₂O / C.

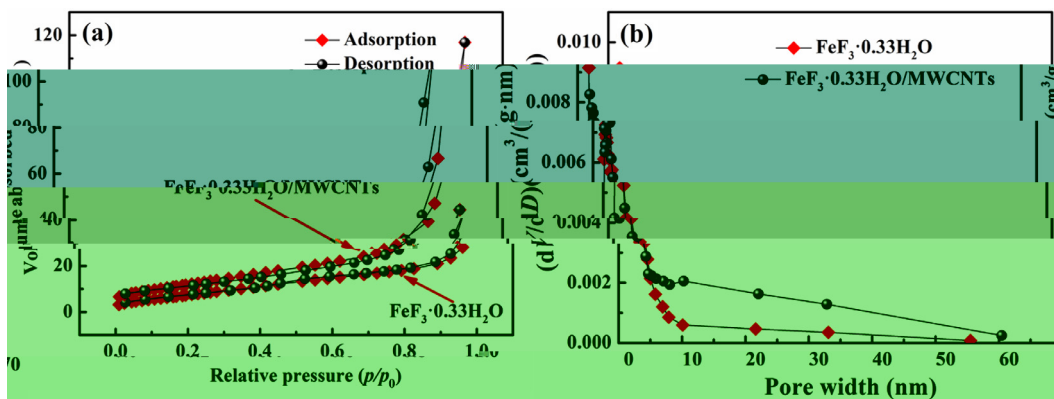


Fig. 4. () 2 / F F₃·0.33H₂ / C . F F₃·0.33H₂ / C ; () BJH F F₃·0.33H₂

y 294.4 A 1. F F₃·0.33H₂ / C
 y 246.0 A 1 5
 y , y 211.6 A 1 10
 y 163.8 A 1 30 y . E ,
 y

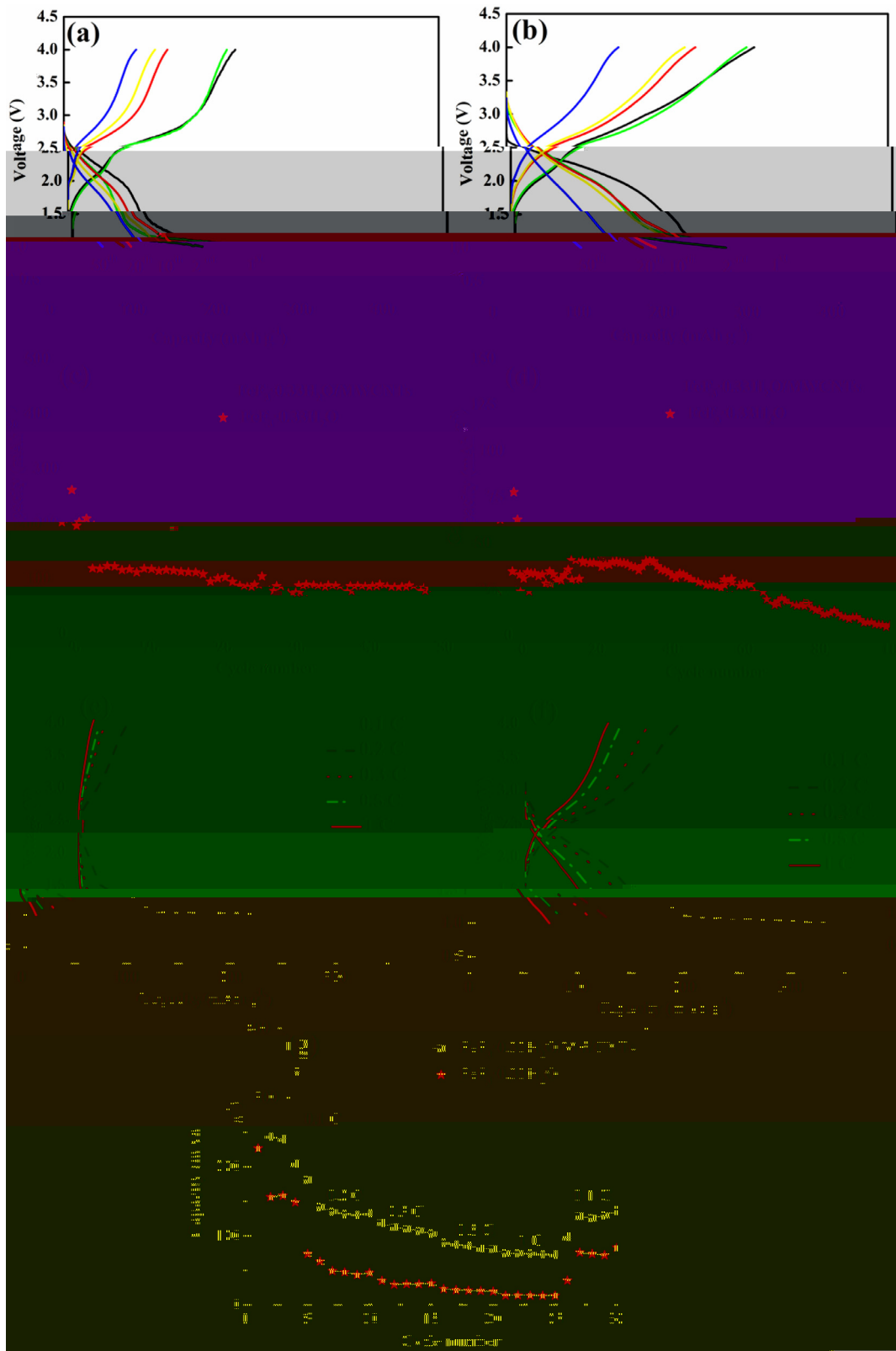


Fig. 5. D $F_{F_3 \cdot 0.33H_2}$ () $F_{F_3 \cdot 0.33H_2}$ / C \bar{y} (1, 2, 10, 20, 50); () D $F_{F_3 \cdot 0.33H_2}$ / C \bar{y} ; () $F_{F_3 \cdot 0.33H_2}$ / C \bar{y} 0.1 C; () L $F_{F_3 \cdot 0.33H_2}$ / C \bar{y} 1 C; () $F_{F_3 \cdot 0.33H_2}$ / C \bar{y} .

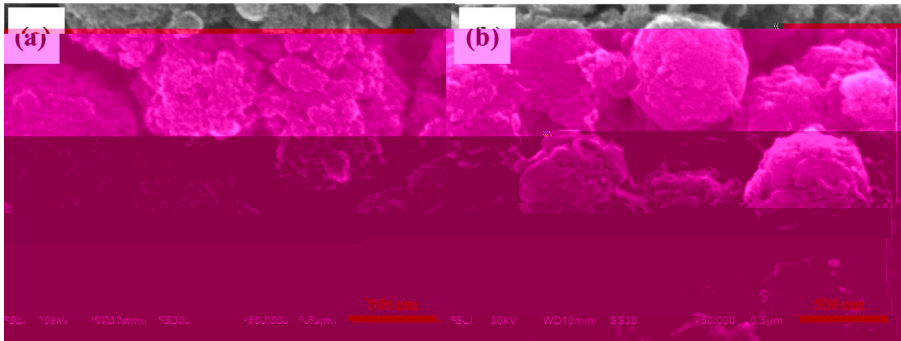


Fig. 6. E () F₃·0.33H₂ () F₃·0.33H₂ / C 50 γ 0.1 C.



Fig. 7. GI () F₃·0.33H₂ () F₃·0.33H₂ / C
 F₃·0.33H₂ F₃·0.33H₂ / C
 F₃·0.33H₂ F₃·0.33H₂ / C
 25 : F₃·0.33H₂ F₃·0.33H₂ / C
 A F₃·0.33H₂ F₃·0.33H₂ / C
 2.7 × 10¹⁴ 6.5 × 10¹⁰ 2 10

$$+ = \frac{4}{\pi} \left[0 - \right]^2 \left[\frac{r}{r/1/2} \right]^2, \ll \frac{2}{+} \quad (3)$$

$F F_3 \cdot 0.33H_2 / C$
 $y. B$
 $+$
 $F F_3 \cdot 0.33H_2 / C$
 $68.$

4. Conclusions

$F F_3 \cdot 0.33H_2 / C$
 $F F_3 \cdot 0.33H_2$
 $F F_3 \cdot 0.33H_2 / C$
 $F F_3 \cdot 0.33H_2 / C$
 $350.4 A^1$
 $123.5 A^1$
 $50 y$
 $0.1 C.$
 $123.8 A^1$
 $1 C$
 $0.1 C$
 25
 $F F_3 \cdot 0.33H_2 / C$
 $IB.$

Acknowledgments

$F C$
 $(. 51272221), K y$
 $I y H$
 $(. 2016GK4005 2016GK4030).$

Supplementary materials

y
 $:10.1016/ . .2017.10.032.$

References

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- 5 B.L. EV.

63 F. . , H. H , H.B. , C. . , L () /F1 1 0000F7 1 .3783 0 D -0002 (E 3) /F2 1 3.0304 0 D 0 () /F7 1 .3811 0 D -0001 (C