



Carbon Fiber Modified With MOF Nanosheets: Potential Use As Electrode For Structural Batteries

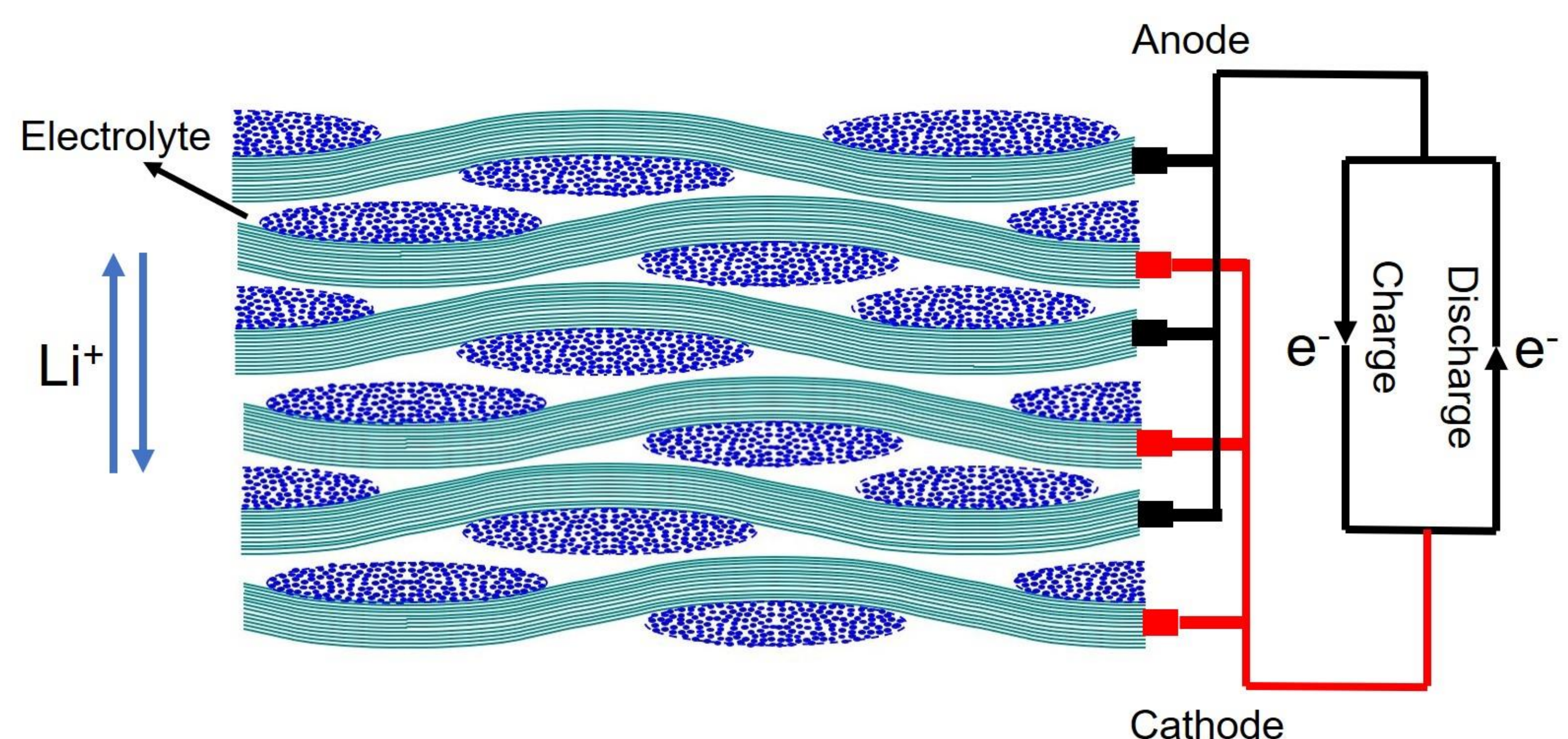
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Significance

As a kind of carbonaceous materials with high mechanical strength, carbon fiber is traditionally used as the electrode for structural batteries due to its high electric conductivity. However, the structural batteries based on carbon fiber reinforced polymer composites (CFRP) mainly suffer from two disadvantages of moderate interfacial properties due to low wettability for most polymers and limited capacity during charge/discharge. Therefore, carbon fiber modification which can enhance the properties of CFRP mechanically and electrochemically is in high demand. Herein, we report on a kind of carbon fiber which is modified by MOF nanosheets and embraces high potential to be used as electrode for structural batteries in replacement of pristine carbon fiber.



Experimental

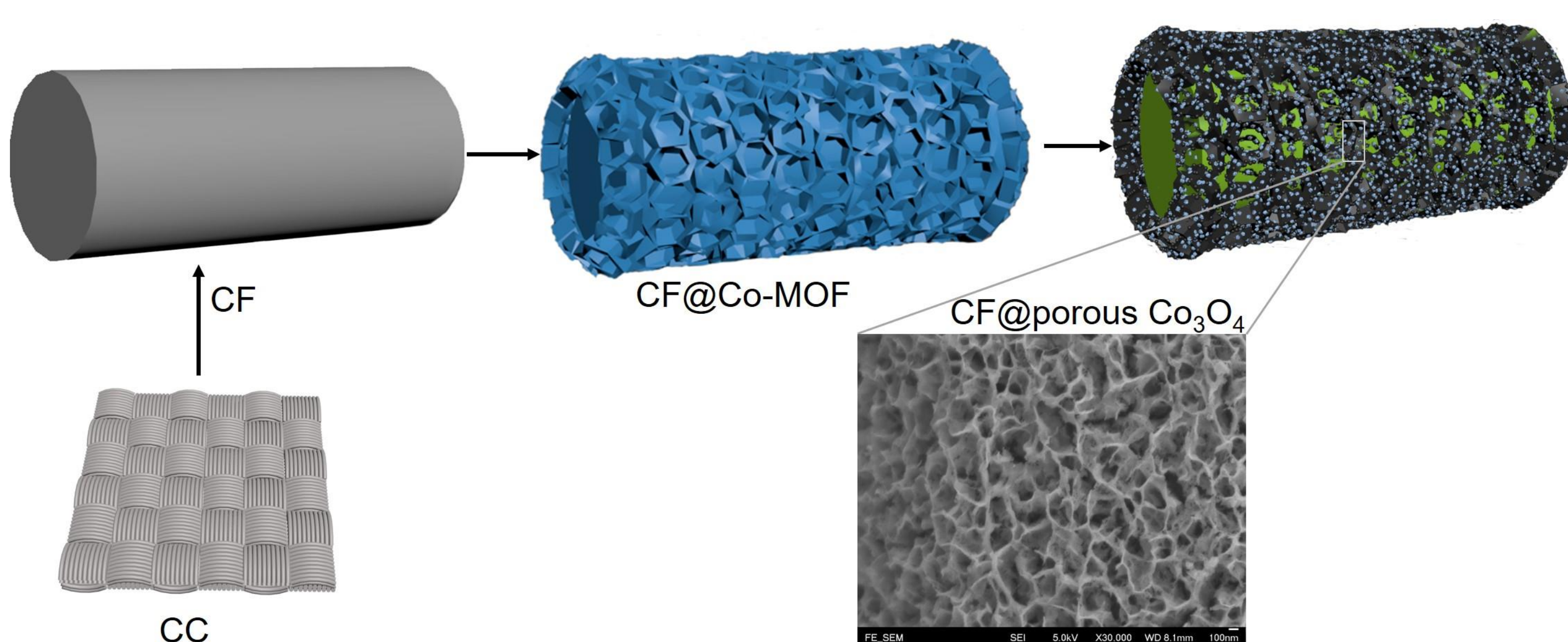
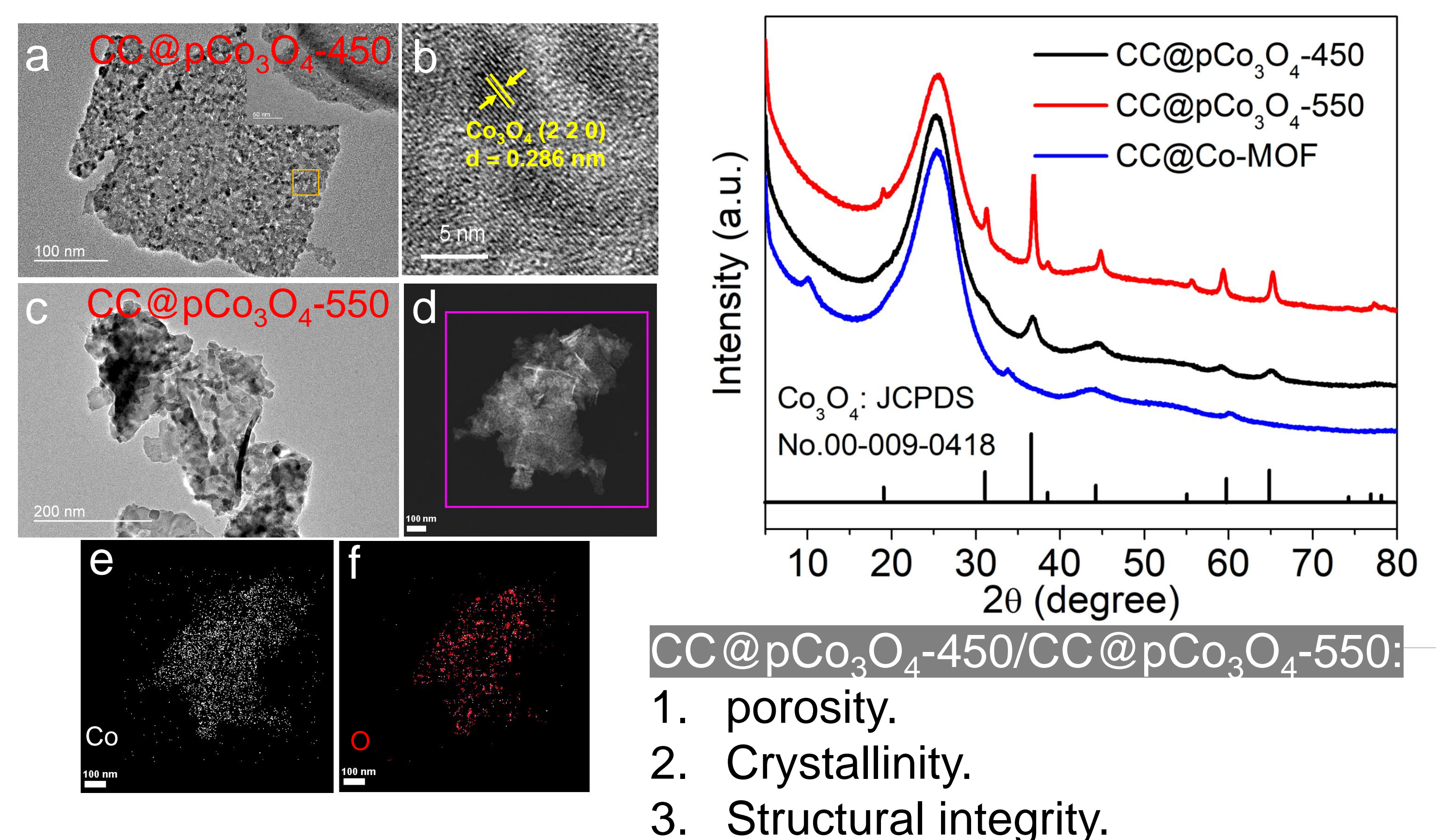
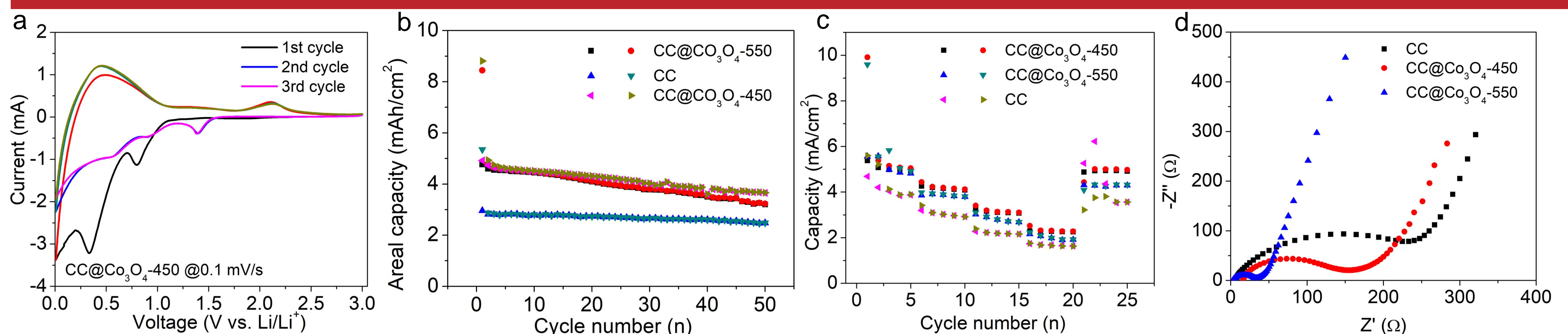


Fig. 1. The fabrication procedures for the preparation of CC@porous Co₃O₄

Material Characterizations



Electrochemical properties of CC@porous Co₃O₄ (CC@pCo₃O₄)



◆ CC@porous Co₃O₄s deliver significantly higher capacities than CC at various current densities.

Conclusion

Through the growth of MOF nanosheets, the obtained CC@porous Co₃O₄ is more advantageous over CC electrochemically. Meanwhile, the hierarchical structure on CC is very likely to enhance the interfacial adhesion, which will be proved in the near future.