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## **Supporting Information**

## Formation of hierarchical carbon nanotube arrays with adjustable patterns

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**Fig. S1** Thermogravimetric analysis of the cross-linked PSPAA after 4 h ultraviolet irradiation [ref. 7b]. Reproduced with the permission of the American Chemical Society. Copyright American Chemical Society 2009.



**Fig. S2** XPS core level scan of Fe after pyrolysis of the cross-linked PSPAA/ferrocene hybrid film [ref. 7b]. Reproduced with the permission of the American Chemical Society. Copyright American Chemical Society 2009.



**Fig. S3** Schematic illustration of formation mechanism of vertically aligned carbon nanotube arrays with adjustable patterns on the substrate. (a) Cavities decorated by ferrocene (purple particles) in the cross-linked polymer matrix was induced by Pickering emulsion effect; (b) Isolated CNT bundles developed from the cavities template by the cross-linked microporous hybrid film; (c) Ferrous inorganic micropatterns (blue skeleton) in hexagonal shape were formed on the substrate after pyrolysis; (d) Dense CNT arrays were initiated to grow under the guidance of inorganic micropatterns.