

Supporting Information

New Insight Into Modulated Up-conversion Luminecent Silica Nanotubes as Efficient Adsorbents for Colored Effluent

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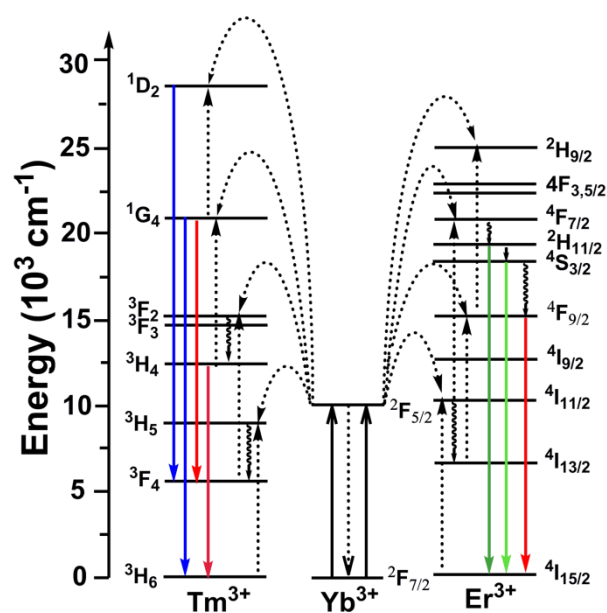


Figure S1 Proposed energy-transfer mechanisms showing the upconversion process in Er^{3+} , Tm^{3+} , and Yb^{3+} doped crystals under 980-nm laser diode excitation. The dashed-dotted, dashed, dotted, and full arrows represent excitation, energy transfer, multiphonon relaxation, and emission processes, respectively.

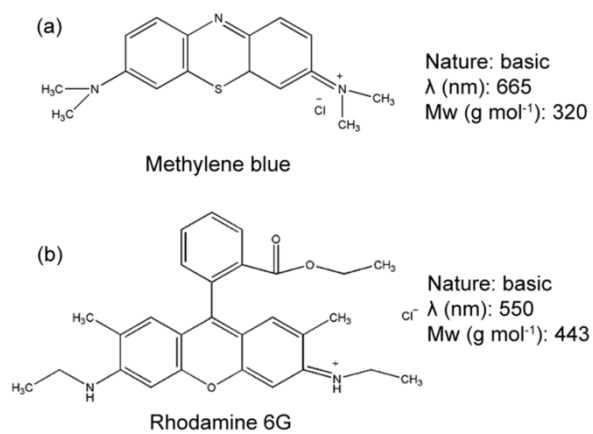


Figure S2 The molecular structures and characteristic properties of the used dyestuffs. Methylene blue (a), rhodamine 6G (b).



Figure S3 Photograph of SNTs in the first adsorption process.

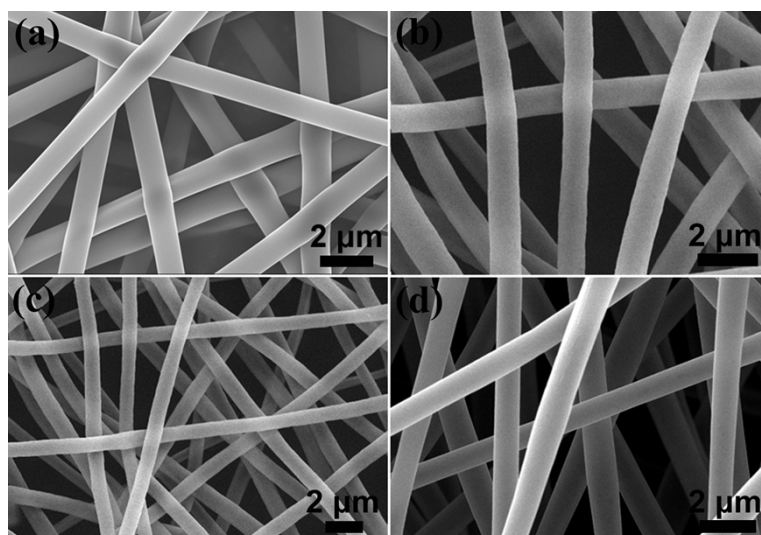


Figure S4 The SEM images of SNTs from the first cycle to the forth (a-d).