Supplementary Material (ESI) for Chemical Communications

Non-Covalent Ruthenium Polypyridyl Complexes-Carbon Nanotubes Composites: An Alternative for Functional Dissolution of Carbon Nanotubes in Solution

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Figure S1: Synthesis scheme for the preparation of Ru(II) complexes (1, 2 and 3).

Figure S2a: Concentration dependent absorption profile of SWCNTs in Ru(II) complexes-SWCNT composites at 642 nm (similar behavior observed at 659 and 784 nm).

Figure S2b: Photographs of (a)SWCNT-1, (b)SWCNT-2 and (c)SWCNT-3 solutions after centrifugation.

Figure S3: NIR fluorescence spectra of SWCNT-1 and SWCNT-3 solutions at 642,659 and 784 nm.

Figure S4: AFM-Histogram analysis of SWCNT-1, SWCNT-2 and SWCNT-3.

Figure S1: Synthesis scheme for the preparation of Ru(II) complexes

The ruthenium complexes **1-3,**[1-3] studied for this work were prepared in a similar way by reaction of $[Ru(bpy)_2Cl_2].2H_20$ with bidentate N-N ligands dppz, dppn and tpphz in methanol/water or ethanol/water (1:1 v/v) at reflux for 4-24 hours. They were then precipitated from aqueous solution with saturated ammonium hexafluorophosphate. The PF_6 salts were dissolved in acetone and produced the water soluble chloride salts upon addition of an saturated aqueous solution of tetra-n-butylammonium chloride (TBACl) in acetone. The chloride salts were further purified by biphasic recrystallization in methanol-ethyl acetate (1:10), (v/v) and used as such. The ligands themselves were prepared by the condensation of phenanthroline-5,6-dione with substituted o-diamino compounds. The analytical characterization data is in accordance with that reported in literature.

1. E. Amouyal, A. Homsi, J.-C. Chambron and J.-P. Sauvage, *J. Chem. Soc. Dalton Trans*., 1990, **6**, 1841.

2. Y. Sun, L.E. Joyce, N.M. Dickson and C. Turro, *Chem. Commun*., 2010, **46,** 2426.

3. J. Bolger, A. Gourdon, E. Ishow and J.-P. Launay, *Inorg. Chem.,* 1996, **35,** 2937.

Figure S2a: Concentration dependent absorption profile of SWCNTs in Ru(II) complexes-SWCNT composites at 642 nm (similar behavior observed at 659 and 784 nm).

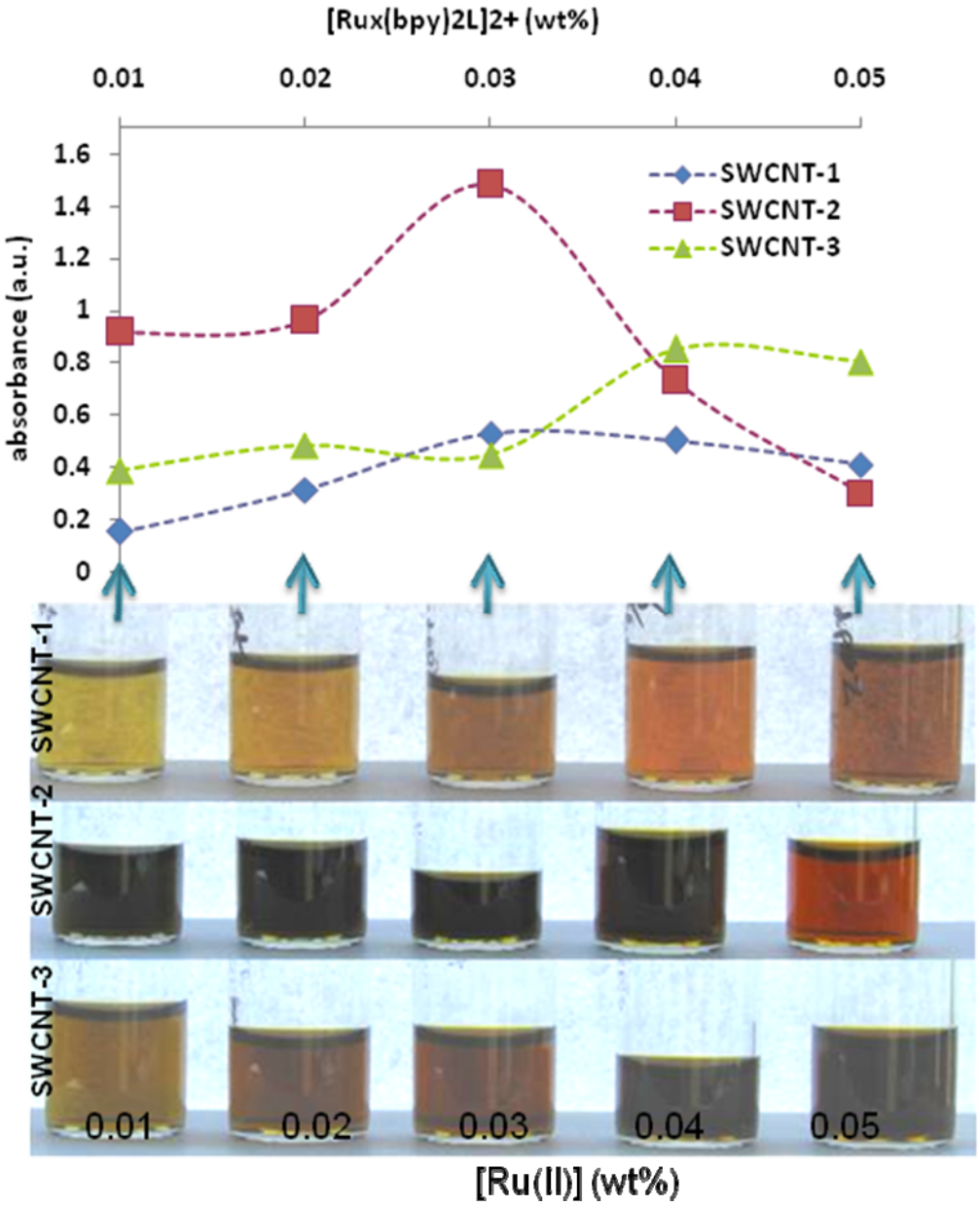
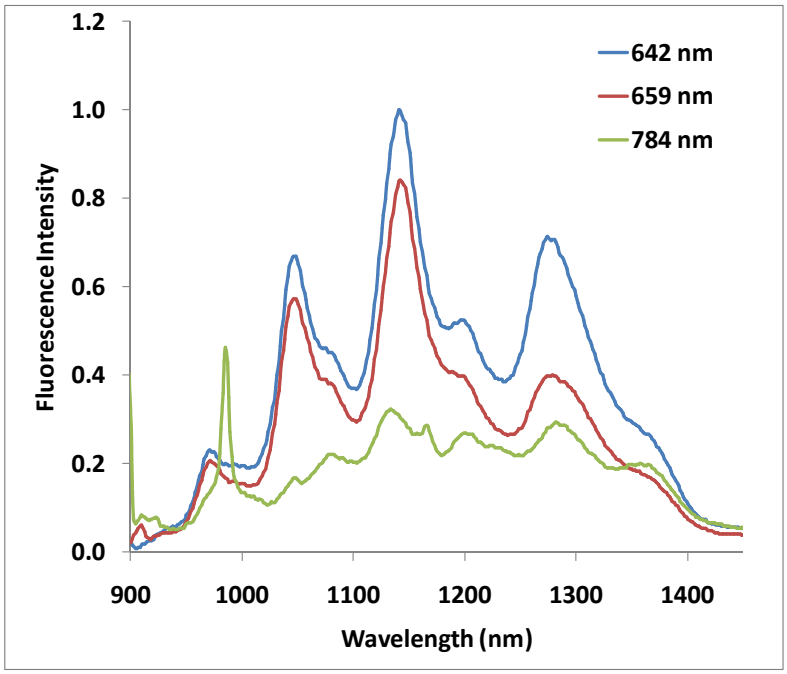


Figure S2b: Photographs of (a)SWCNT-1, (b)SWCNT-2 and (c)SWCNT-3 solutions after centrifugation.

Figure S3: NIR fluorescence spectra of SWCNT-1 (TOP) and SWCNT-3 (BOTTOM) solutions at 642,659 and 784 nm.



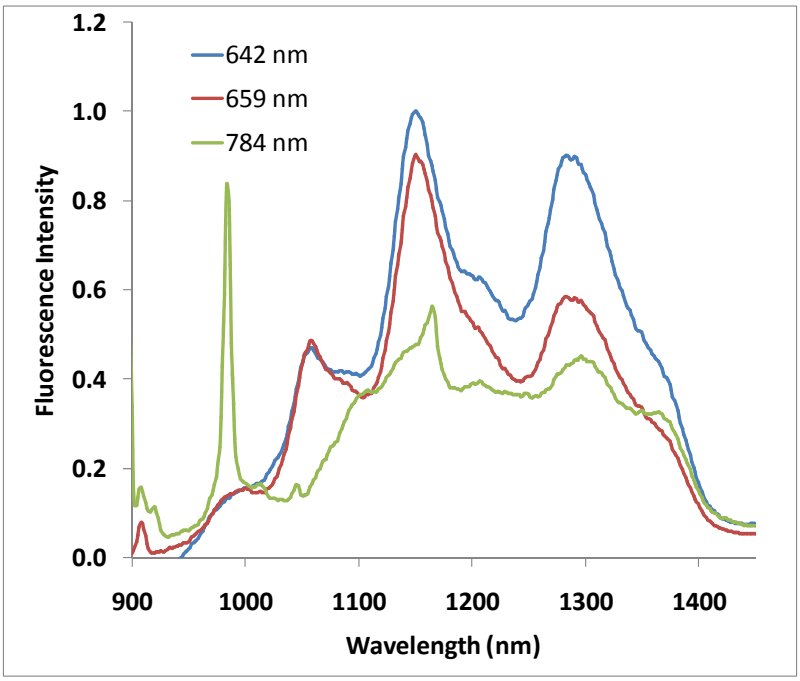

642 nm
659 nm
784 nm
Fluorescence Intensity
1.2
1.0
0.8
0.6
0.4
0.2
0.0
900
1000
1100
1200
1300
1400
Wavelength (nm)

Figure S4: AFM-Histogram analysis of SWCNT-1, SWCNT-2 and SWCNT-3.