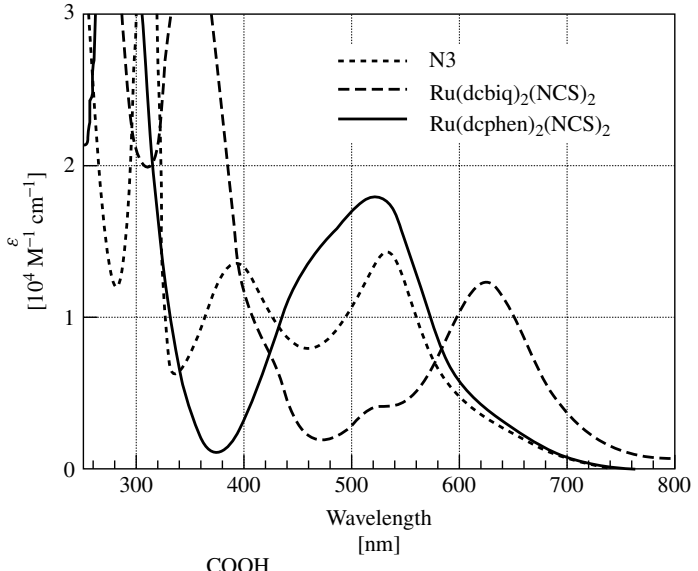
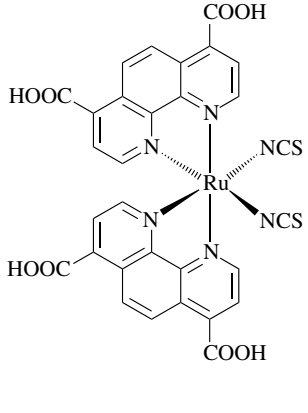
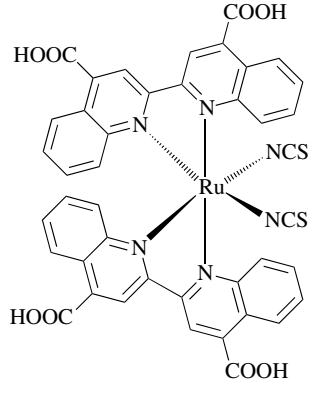




Ru(dcphen)$_2$(NCS)$_2$



Ru(dcbiq)$_2$(NCS)$_2$

Figure 15.12 Molecular structures of new metal complex photosensitizers, Ru(dcphen)$_2$(NCS)$_2$ and Ru(dcbiq)$_2$(NCS)$_2$, and their absorption properties in ethanolic solution: (– – –) N3 dye [6, 103], (— —) Ru(dcbiq)$_2$(NCS)$_2$ [103, 114], (——) Ru(dcphen)$_2$(NCS)$_2$ [111, 115, 117]. The y-axis is represented by molar absorption coefficient, ε

of the semiconductor electrodes and accept electrons from I^- ions, respectively, is very important in developing new efficient photosensitizers.

Metal complexes having metal centers other than Ru have also been synthesized and their performance have been investigated. These include Fe complexes [123, 124], Os complexes [125–128], Re complexes [129], and Pt complexes [130]. A nanocrystalline TiO_2 solar cell sensitized by a square-planar platinum (II) complex containing 4,4′-dicarboxy-2,2′-bipyridine and quinoxaline-2,3-dithiolate ligands showed an efficiency of 2.6% ($J_{SC} = 6.14$ mA cm^{-2} and $V_{OC} = 0.60$ V) under simulated AM1.5 solar irradiation [130]. However, highly efficient performance exceeding that of the Ru complex