

SUPPORTING INFORMATION

High efficiency ruthenium(II) *tris*-heteroleptic dye containing 4,7-dicarbazole-1,10-phenanthroline for nanocrystalline solar cells

Andressa V. Müller[†], Luiz D. Ramos[†], Karina P. M. Frin[†], Kleber T. de Oliveira[‡], André S. Polo^{*†}

[†]Centro de Ciências Naturais e Humanas, Universidade Federal do ABC - UFABC, Av dos Estados, 5001, 09210-580, Santo André - SP, Brazil

[‡]Departamento de Química, Universidade Federal de São Carlos – UFSCAR, Rodovia Washington Luis, km 235, 13565-905, São Carlos – SP, Brazil

*andre.polo@ufabc.edu.br

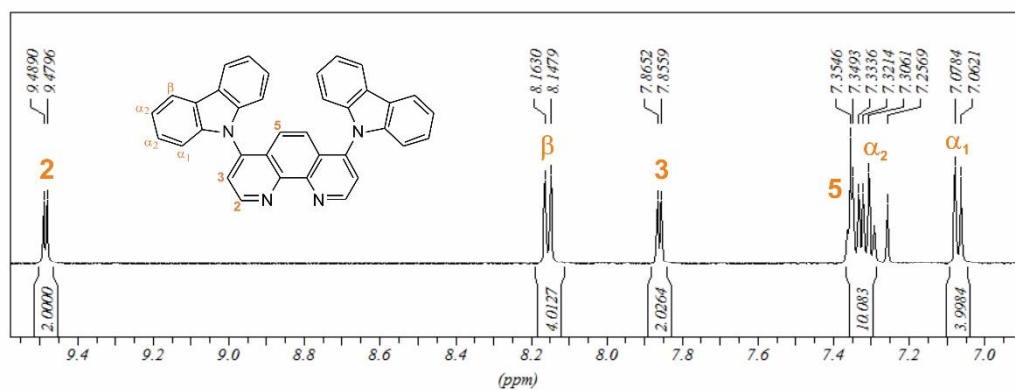


Figure S1. ^1H NMR spectrum of the $\text{cbz}_2\text{-phen}$ ligand ($\text{CDCl}_3/500\text{ MHz}$, 298 K).

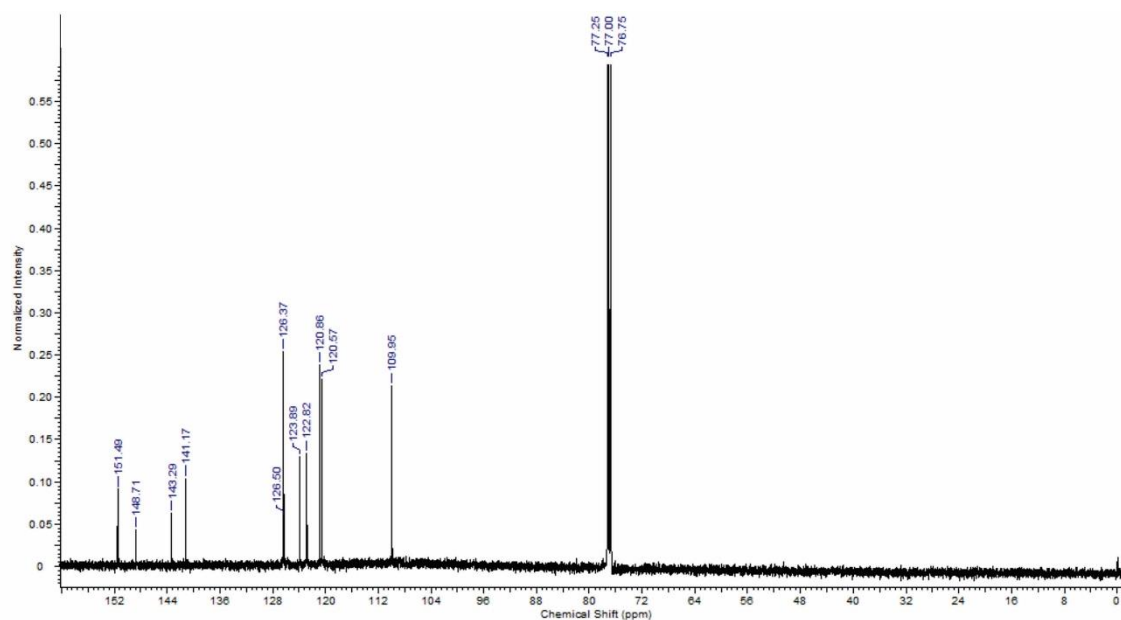


Figure S2. $^{13}\text{C}\{^1\text{H}\}$ NMR spectrum of the $\text{cbz}_2\text{-phen}$ ligand ($\text{CDCl}_3/125\text{ MHz}$, 298 K).

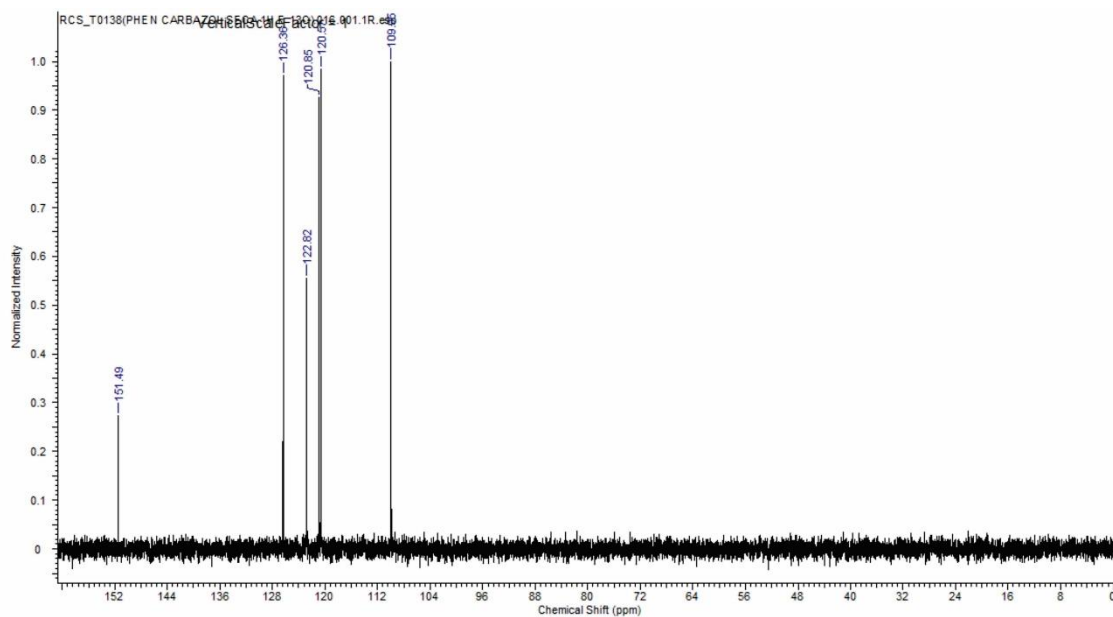


Figure S3. DEPT-135 ^{13}C NMR spectrum of the $\text{cbz}_2\text{-phen}$ ligand ($\text{CDCl}_3/125\text{ MHz}$, 298 K).

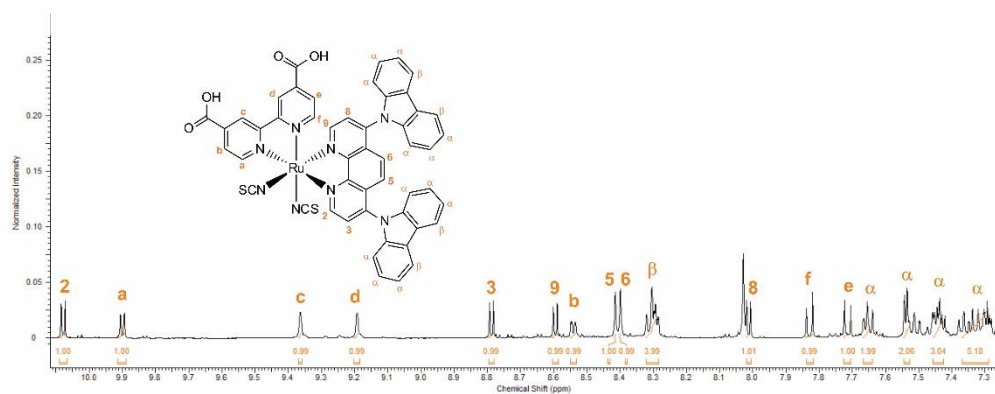


Figure S4. ^1H NMR spectrum of $\text{cis-}[\text{Ru}(\text{cbz}_2\text{-phen})(\text{dcbH}_2)(\text{NCS})_2]$ ($\text{DMF-d}_7/500\text{ MHz}$, 298 K).

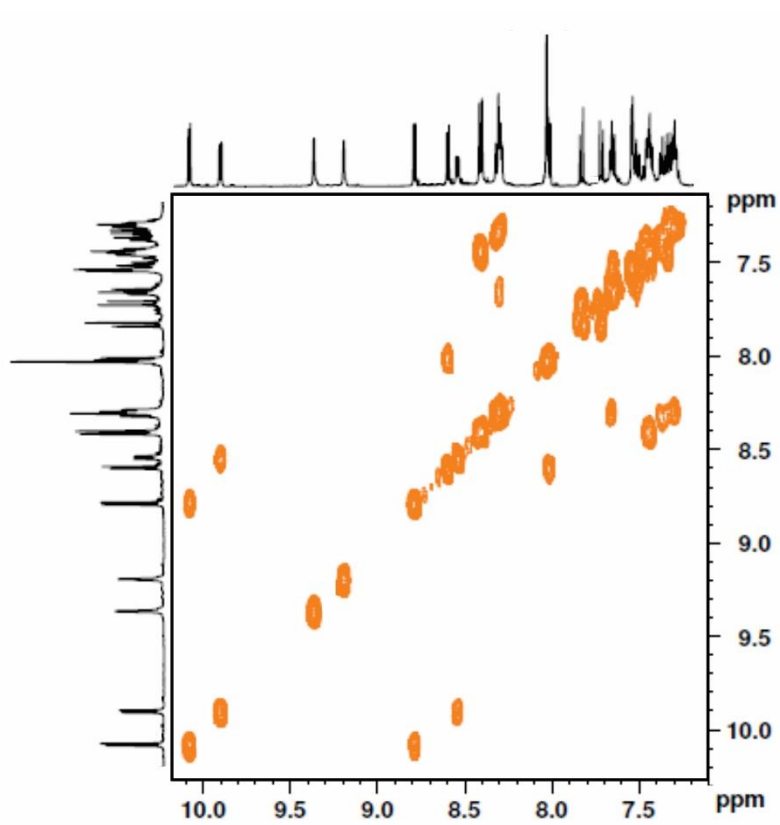


Figure S5. ^1H - ^1H COSY spectrum of *cis*-[Ru(cbz₂-phen)(dcbH₂)(NCS)₂] (DMF-d₇/500 MHz, 298 K).

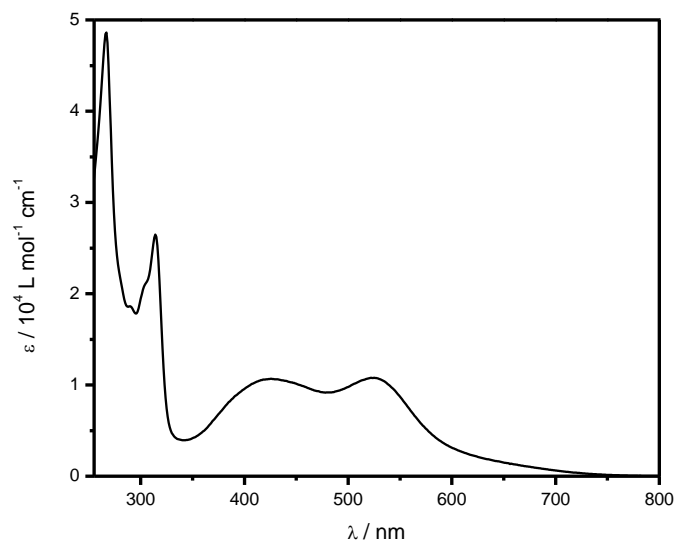


Figure S6. Absorption spectrum of *cis*-[Ru(phen)(dcbH₂)(NCS)₂] in ethanol.

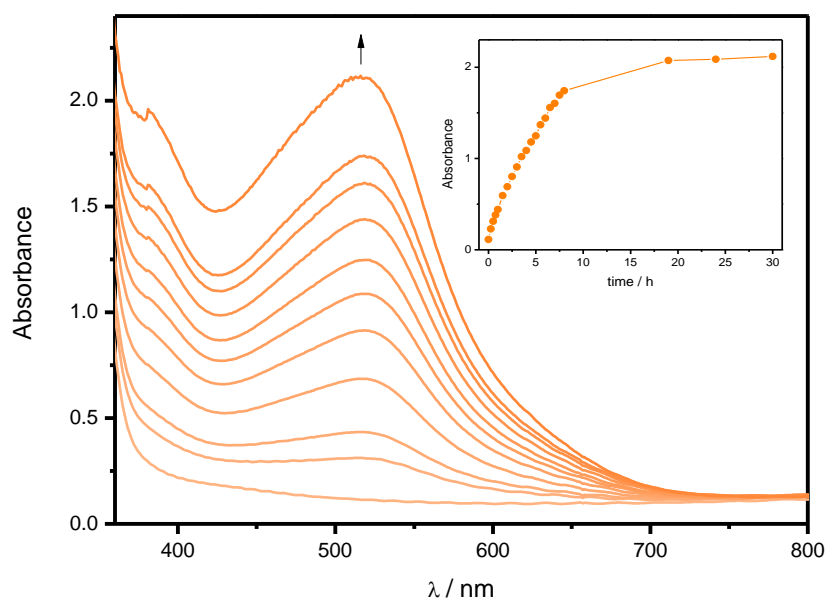


Figure S7. Absorption spectra of the TiO₂ film during sensitizing by *cis*-[Ru(cbz₂-phen)(dcbH₂)(NCS)₂]. (Inset: absorption changes at 520 nm as a function of time).