**LIST OF TABLES**

Table 3-1. Co (3, 5 %) doped ZnO NPs of different initial sizes: Crystallite size determined from XRD profile; saturation magnetization ($M_s$), coercive filed ($H_c$); remanent magnetization ($M_r$) are determined from M-H curves; and transition temperature ($T_c$) are listed. $M_0$, $m_{eff}$, $\chi_m$, $N$ are calculated by BMP model fitting from the M-H curve with. .................................................................63

Table 3-2. Summary of the PL peaks with UV and visible emission bands fitted with Gaussian line shapes. Absorption peaks are measured from the respective UV-visible absorption spectrum.................................................................80

Table 3-3. Saturation magnetization ($M_s$), coercivity ($H_c$), and retentivity ($M_r$) determined from M-H curve; transition temperature ($T_c$) determined from differentiated M-T curve. $M_0$, $m_{eff}$, $\chi_m$, $N$ are extracted from the BMP fitting of the M-H curves for different Zn$_{1-x}$Ni$_x$O ($x = 0, 0.03$) samples.................................................................81

Table 3-5 Detail of magnetic measurements for Ti$_{1-x}$Co$_x$O$_2$ ($x = 3\%, 8\%$) NPs: saturation magnetization ($M_s$), coercive filed ($H_c$); remanent magnetization ($M_r$) and transition temperature ($T_c$) are listed. $M_0$, $m_{eff}$, $\chi_m$, $N$ are calculated from BMP model fitting of the M-H curve. .................................................................92

Table 4-1 Lattice parameters calculated from the XRD pattern; Elemental composition extracted from XPS spectra. .................................................................108

Table 4-2 Summary of the PL peaks with UV and visible emission bands fitted with Gaussian line shapes. Absorption peaks are measured from the respective UV-visible absorption spectrum.................................................................109

Table 4-3 Saturation magnetization ($M_s$), coercivity ($H_c$), and retentivity ($M_r$) determined from M-H curve; transition temperature ($T_c$) determined from differentiated M-T curve. $M_0$, $m_{eff}$, $\chi_m$, $N$ are determined from the BMP fitting of the M-H curves for different Zn$_{1-x}$Co$_x$O ($x = 0, 0.05, 0.07$) samples. .................................................................109

Table 4-4 Lattice parameters calculated from the XRD pattern; Elemental composition extracted from XPS spectra. .................................................................122
Table 4-5 Summary of the PL peaks with UV and visible emission bands fitted with Gaussian peaks................................................................. 122

Table 4-6 Saturation magnetization ($M_s$), coercivity ($H_c$), and retentivity ($M_r$) determined from M-H curve; $M_0$, $m_{\text{eff}}$, $\chi_m$, N are determined from the BMP fitting of the M-H curves for different Zn$_{1-x}$Ni$_x$O ($x = 0, 0.03, 0.05$) samples. ........................................ 122