

## List of Tables

	Page
1.1 Electronic configurations of trivalent rare-earth ions in the ground state	12
2.1 Hardware specifications	55
2.2 Software Specifications	56
3.1 Comparison of effective ionic radii ( $\text{\AA}$ )	80
3.2 Photoluminescence peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Eu}^{3+}$ phosphor	86
3.3 Photoluminescence peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Eu}^{3+},\text{Dy}^{3+}$ phosphor	90
4.1 PL emission intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb}^{3+}$ for varying $\text{Tb}^{3+}$ concentration.	106
4.2 The list of calculated values by the Chen's equation.	109
4.3 TL peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb}^{3+}$ phosphor for varying $\text{Tb}^{3+}$ concentration	110
4.4 Photoluminescence (PL) peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb},\text{Eu}$ for varying concentration of $\text{Eu}^{3+}$ .	116
4.5 PL excitation peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb},\text{Eu}$ for varying concentration of $\text{Tb}^{3+}$ and $\text{Eu}^{3+}$ .	120
4.6 PL emission peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb},\text{Eu}$ for varying concentration of $\text{Tb}^{3+}$ and $\text{Eu}^{3+}$ .	122
4.7 Thermoluminescence peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb},\text{Eu}$ for varying concentration of $\text{Eu}^{3+}$ .	124
4.8 Thermoluminescence peak intensity of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb},\text{Eu}$ for varying concentration of $\text{Tb}^{3+}$ and $\text{Eu}^{3+}$ .	127
5.1 Summary of PL results of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Eu}^{3+},\text{Ce}^{3+}$	134
5.2 Summary of PL results of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Eu}^{3+},\text{R.E.}^{3+}$	138
5.3 Summary of PL results of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb}^{3+},\text{Ce}^{3+}$	141
5.4 Summary of PL results of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Eu}^{3+},\text{Dy}^{3+},\text{H}_3\text{BO}_3$	145
5.5 Summary of PL results of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Tb}^{3+},\text{Ce}^{3+},\text{H}_3\text{BO}_3$	148
5.6 Summary of TL results of $\text{Sr}_3\text{Al}_2\text{O}_6:\text{Eu}^{3+},\text{R.E.}^{3+}$	151