## LIST OF TABLES

Table No.	Description	Page No.
3.1	Wear rates of paraffin oil in absence and presence of Schiff bases and their synergistic formulations as antiwear additives at 392N applied load	52
3.2a	EDX analysis data of the worn steel surface lubricated with paraffin oil in presence and absence of additives (1% w/v) for 90 min test duration at 392N applied load	58
3.2b	EDX analysis data of the worn steel surface lubricated with different additives (1% w/v) for 30 min test duration at 588N applied load	59
3.3	Calculated quantum chemical parameters of Schiff base antiwear lubricant additives calculated with B3LYP/6-31G++(dp) basis set	63
4.1	Surface morphology of copper specimen and their grade after the copper strip corrosion test of studied additives at 100 °C for 3hrs	72
4.2	Molecular structure of investigated Schiff bases and their copper complexes as antiwear lubricant additives	74
4.3	Wear rates of paraffin oil in absence and presence of Schiff bases and their copper complexes as antiwear additives at 392N applied load for 90 min test duration	78
4.4	EDX analysis data of the worn steel surface lubricated with paraffin oil in presence and absence of ZDDP (1% w/v) for 90 min test duration at 392N applied load	87
4.5	Calculated quantum chemical parameters of antiwear lubricant additives calculated with B3LYP/LanL2DZ basis set	92
5.1	Wear-rate for paraffin oil in the presence and absence of different SCCZTO nanoparticles and ZDDP $(1\% w/v)$ for 90 minute test duration at 392 N applied load	108

- 5.2 EDX analysis data of the worn steel surface under lubricating 116 condition with and without additives for 90 min test duration at applied load 392 N: (a) Paraffin oil (base oil), (b) ZDDP (1% w/v) and (c) SCCZTO-6h nanoparticles (1% w/v)
- 5.3 EDX analysis data of the worn steel surface lubricated with (a) ZDDP 117 and (b) SCCZTO-6h nanoparticles (1% w/v) for 30 min test duration at 588 N applied load
- 6.1 Wear rates of paraffin oil in absence and presence of MRG based 137 nanomaterials as antiwear additives at 392N applied load for 90 min test duration

## LIST OF SCHEMES

Scheme No.	Description	Page No.
3.1	Synthesis of Schiff bases of 4-aminoantipyrine with different substituted aldehydes	41
4.1	Synthesis of Schiff base ligands derived from benzhydrazide with substituted carbonyl compounds	67
4.2	Synthesis of Schiff bases derived from benzhydrazide with substituted carbonyl compounds	67
6.1	Microwave Assisted Approach for the preparation of B-N co-doped-MRG nanomaterials	125