

Smart Dataset Analyzer Interactive Report

ML Readiness Score: 100/100

No critical issues detected. Dataset is ready for ML modeling.

Feature Statistics

	count	mean	std	min	25%	50%	75%	max	missing_values	missing_pct	unique_values	variance
Stress (MPa)	22.0	3.188636e+02	8.724530e+01	200.0	250.00	310.0	387.5	500.0	0	0.0	9	7.611742e+03
Build orientation	22.0	4.500000e+01	3.674235e+01	0.0	0.00	45.0	90.0	90.0	0	0.0	3	1.350000e+03
Defect depth (um)	22.0	5.177273e+01	2.565324e+01	23.0	30.75	49.5	64.0	128.0	0	0.0	19	6.580887e+02
Defect size (um)	22.0	6.154545e+01	2.585072e+01	28.0	39.75	59.0	78.0	115.0	0	0.0	20	6.682597e+02
Distance to surface (um)	22.0	5.015909e+02	3.391858e+02	85.0	279.00	343.5	720.0	1303.0	0	0.0	22	1.150470e+05
Nf (cycle)	22.0	1.074523e+08	1.628159e+08	110000.0	4315000.00	24450000.0	132250000.0	535000000.0	0	0.0	22	2.650901e+16

Outlier Analysis

Column	Outlier Count	Example Values	Outlier %
Stress (MPa)	0	View	%
Build orientation	0	View	%
Defect depth (um)	1	View	%
Defect size (um)	0	View	%
Distance to surface (um)	0	View	%
Nf (cycle)	0	View	%

Normality Test Results

Feature	Skew	Kurtosis	Shapiro p	D'Agostino p	KS p	Status
Stress (MPa)	0.389	-0.847	0.2391	0.4743	0.6619	☒ Normal
Build orientation	0.000	-1.429	0.0006	0.0141	0.2597	☐ Non-Normal
Defect depth (um)	1.199	1.515	0.0215	0.0077	0.7324	☐ Non-Normal
Defect size (um)	0.549	-0.670	0.2097	0.4173	0.9125	☒ Normal
Distance to surface (um)	0.909	-0.314	0.0134	0.1443	0.1872	☐ Non-Normal
Nf (cycle)	1.659	1.568	0.0000	0.0010	0.0634	☐ Non-Normal

Target Leakage Detection

Feature	Accuracy
Defect size (um)	0.80

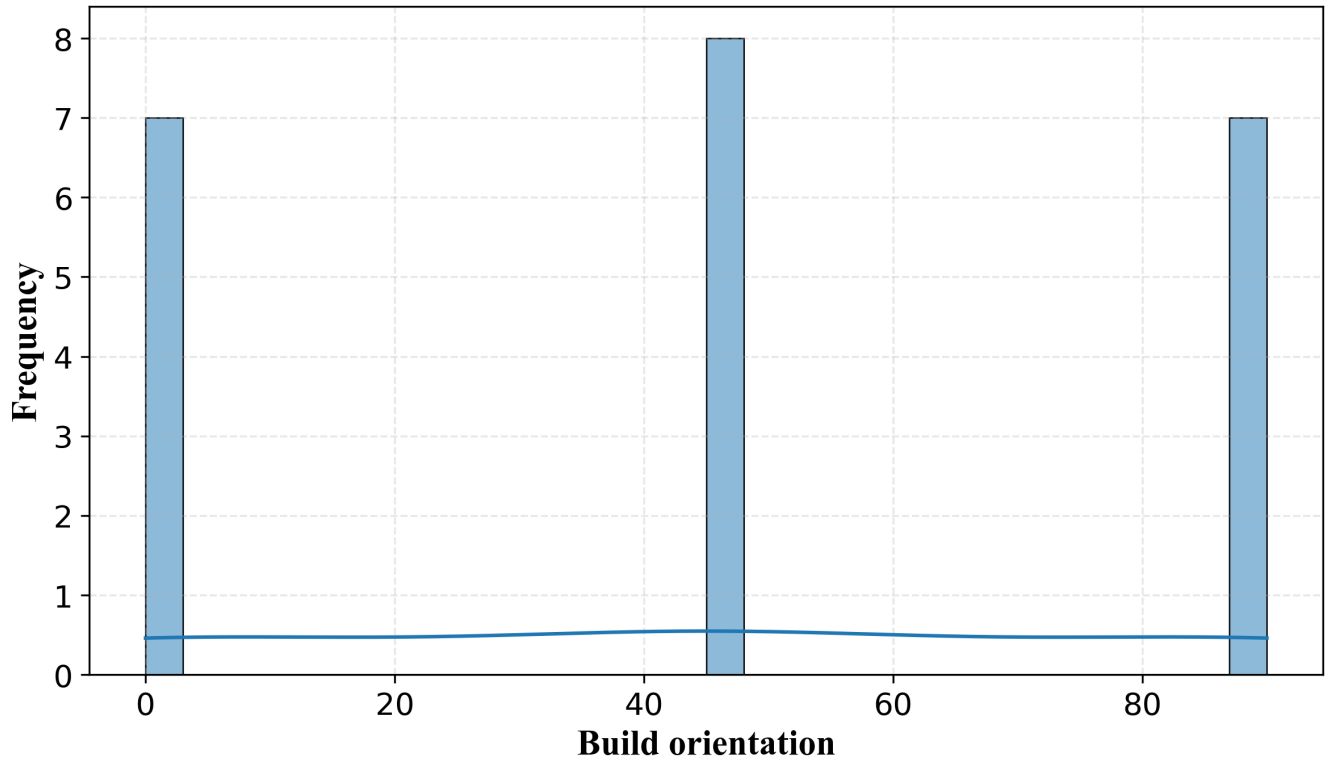
Distance to surface (um)	0.76
Nf (cycle)	1.00

Class Imbalance Check

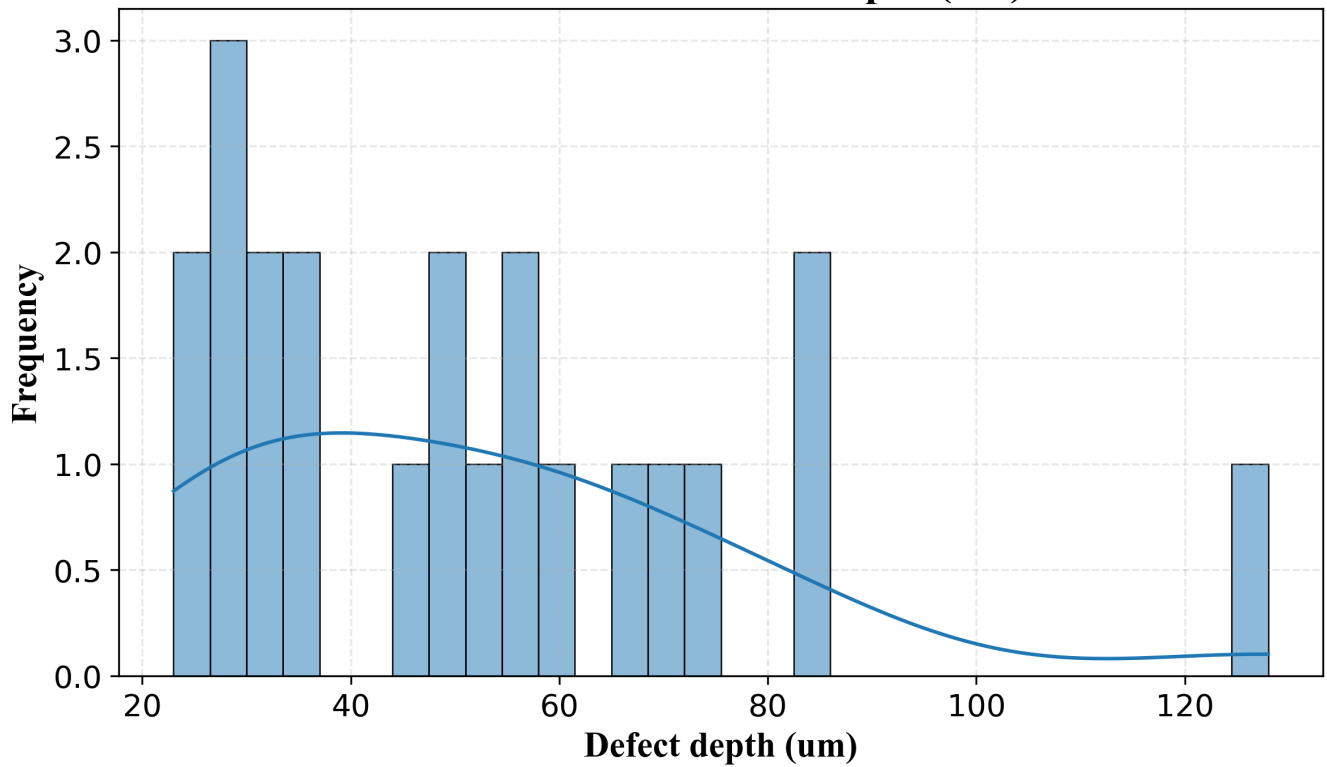
Class	Percentage
27	9.09%
36	9.09%
23	9.09%
57	4.55%
44	4.55%
83	4.55%
53	4.55%
29	4.55%
70	4.55%
65	4.55%
74	4.55%
61	4.55%
50	4.55%
128	4.55%
30	4.55%
49	4.55%
56	4.55%
33	4.55%
85	4.55%

Distribution Plots

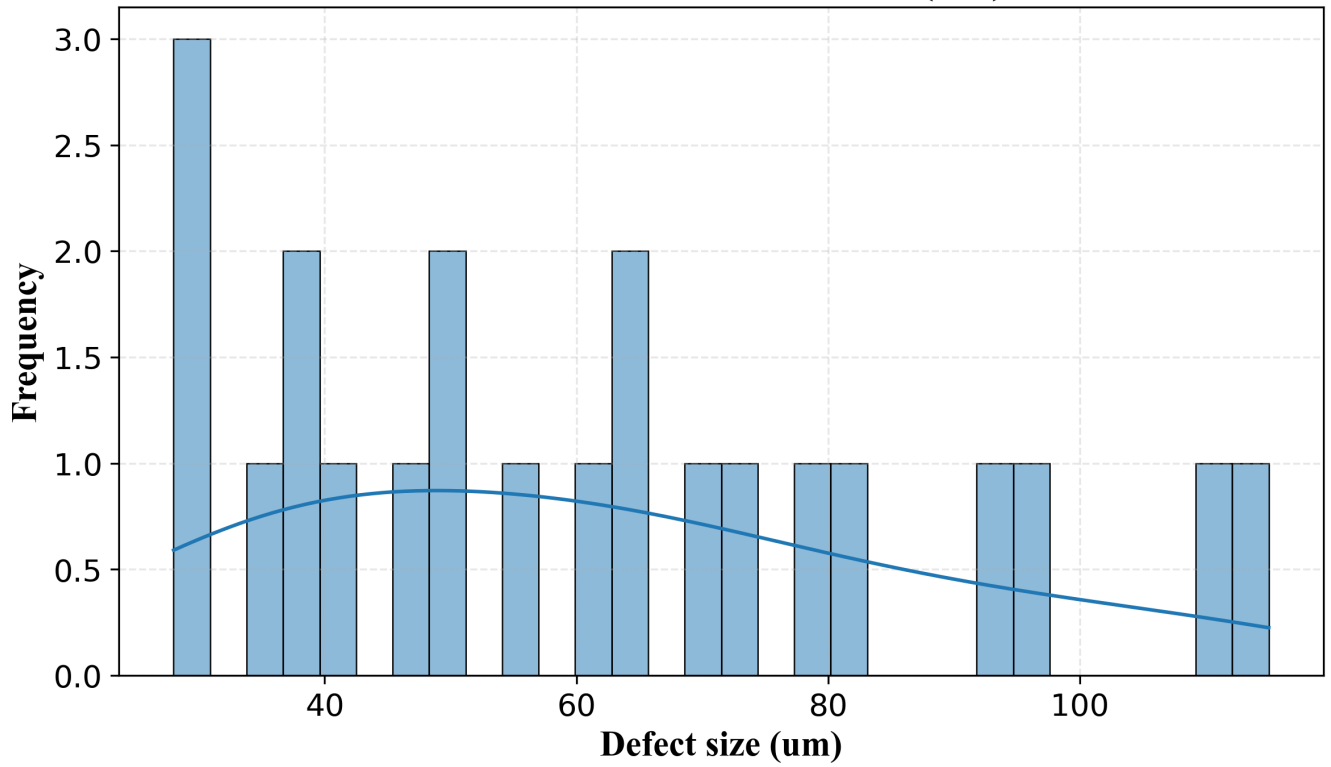
Distribution of Build orientation



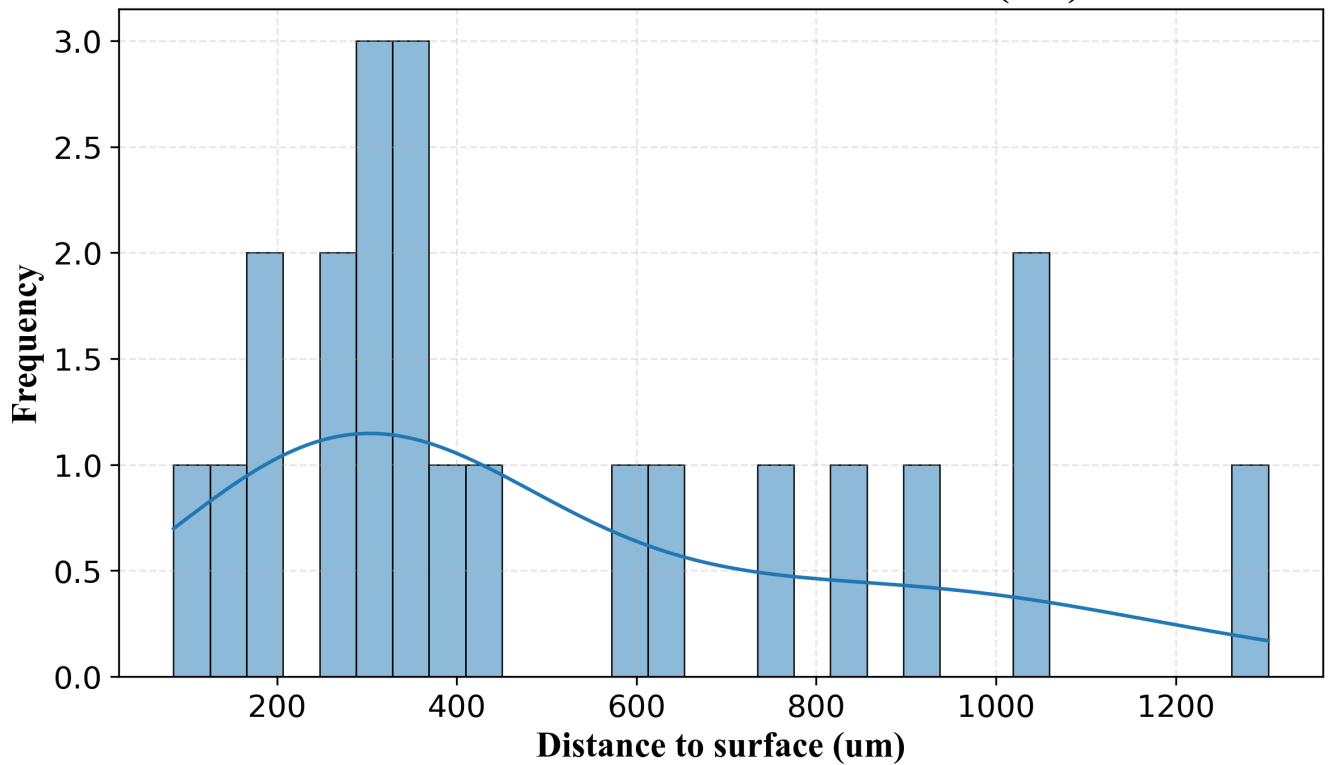
Distribution of Defect depth (um)



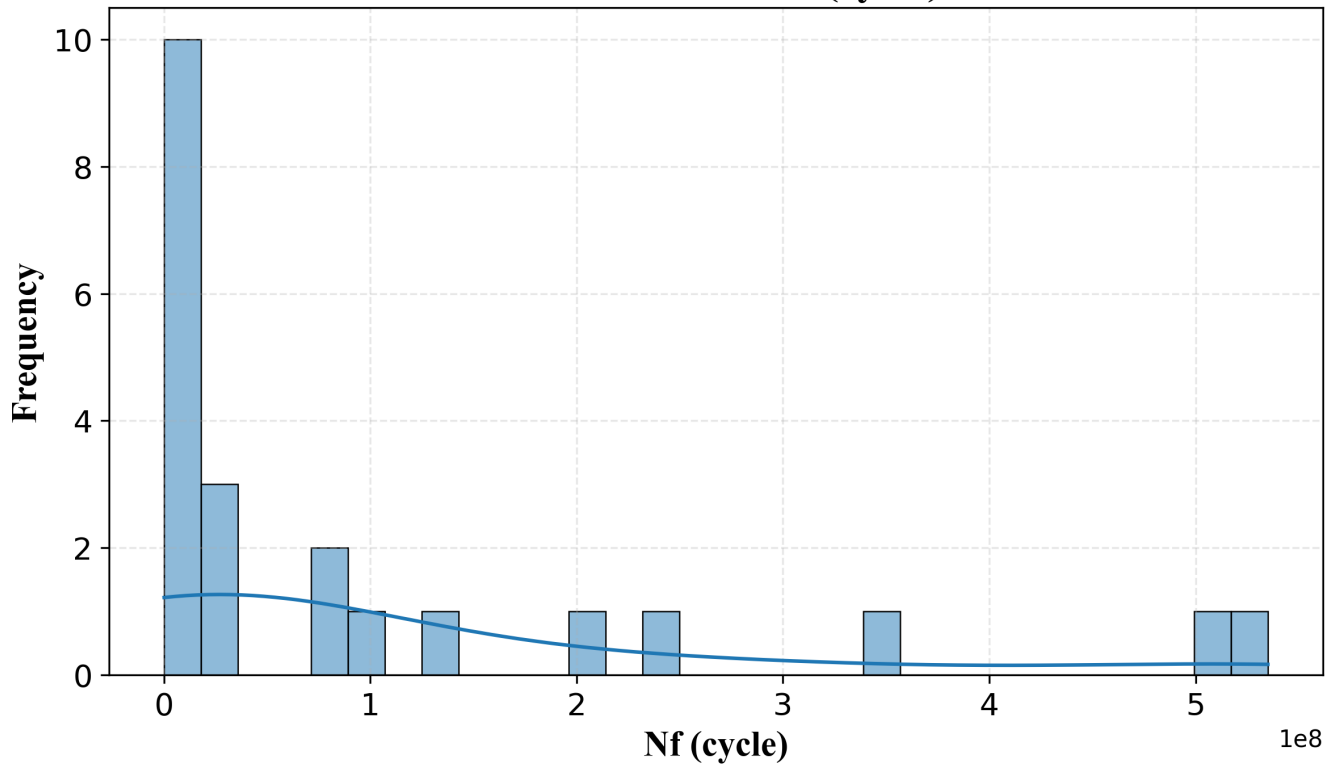
Distribution of Defect size (um)



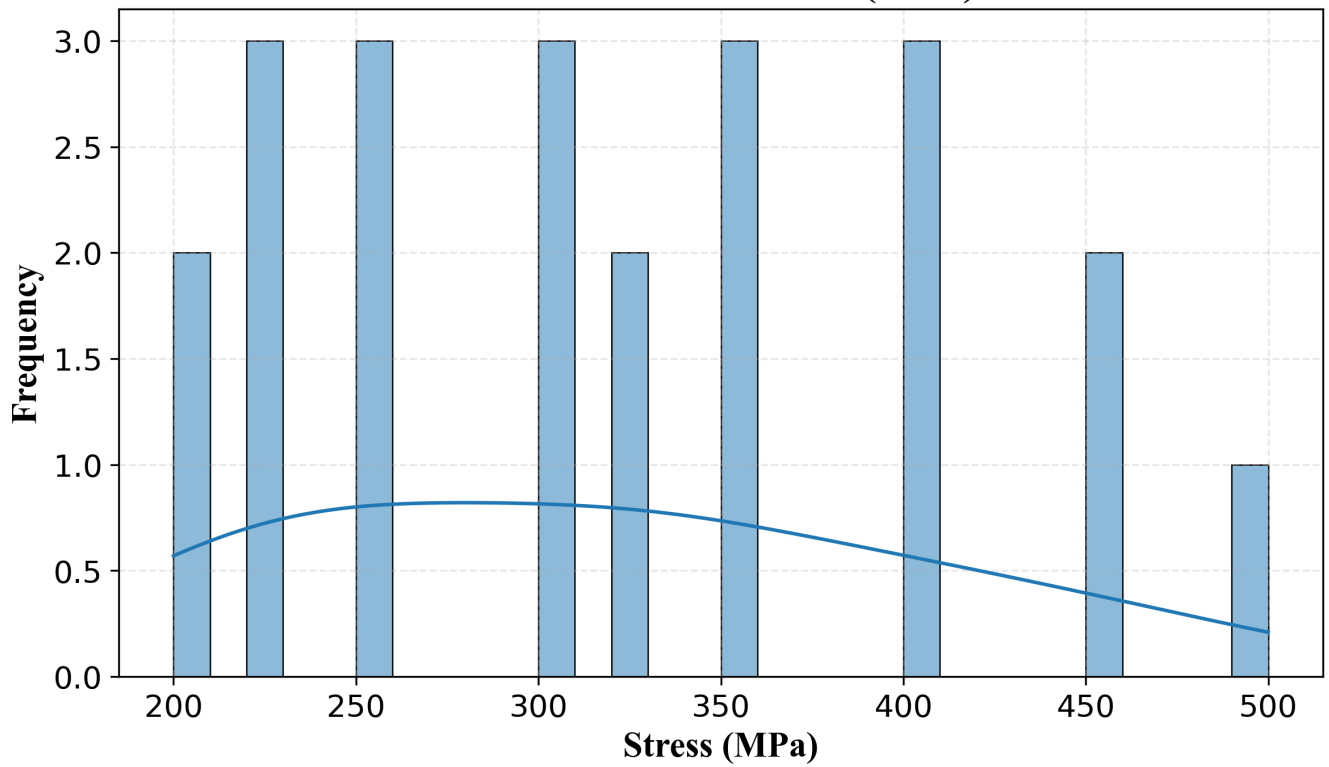
Distribution of Distance to surface (um)



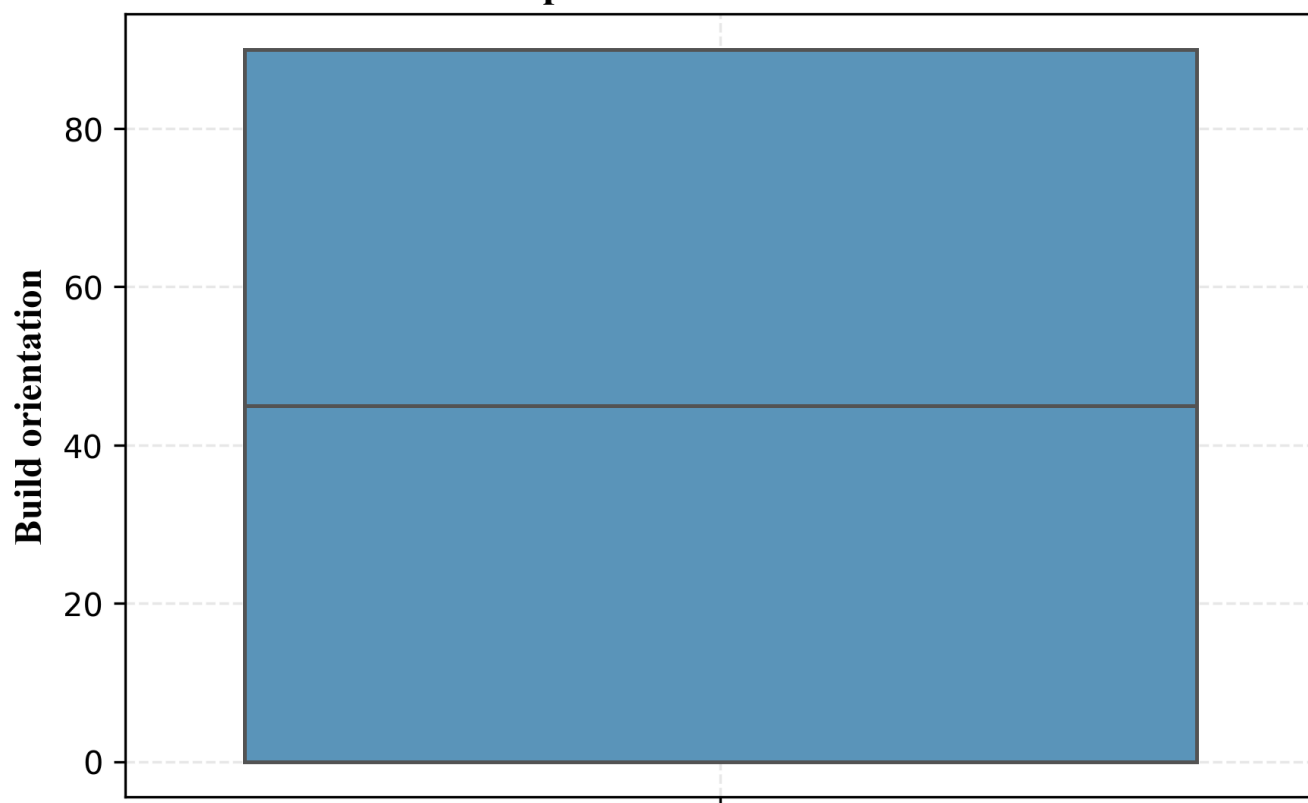
Distribution of Nf (cycle)



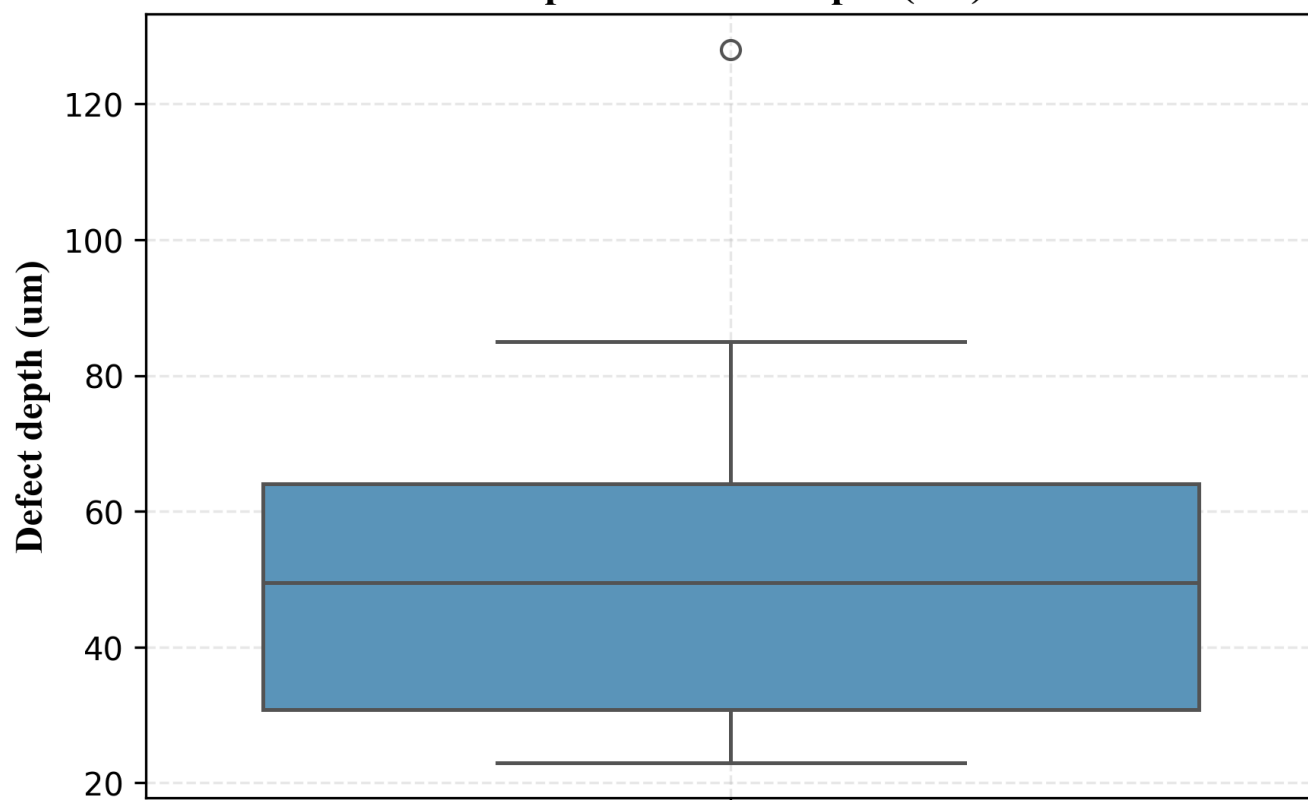
Distribution of Stress (MPa)



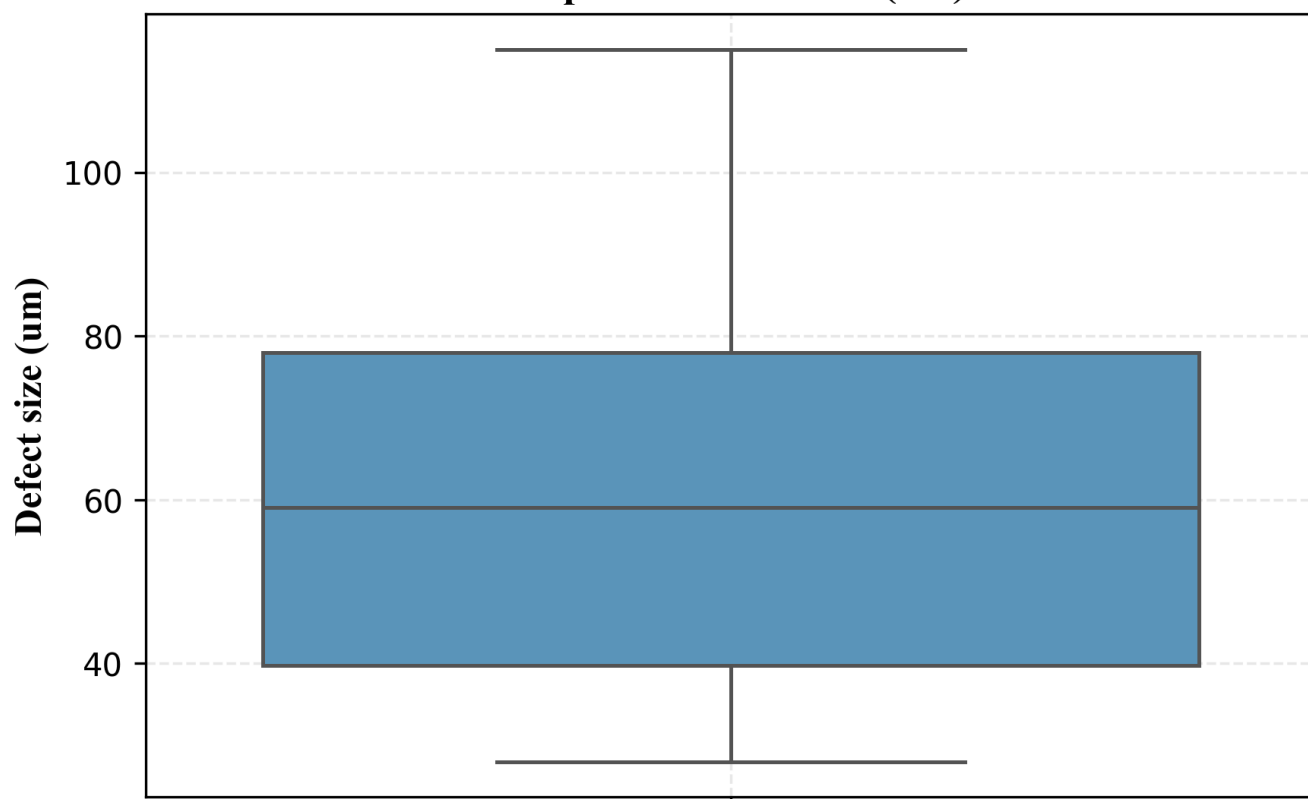
Boxplot of Build orientation



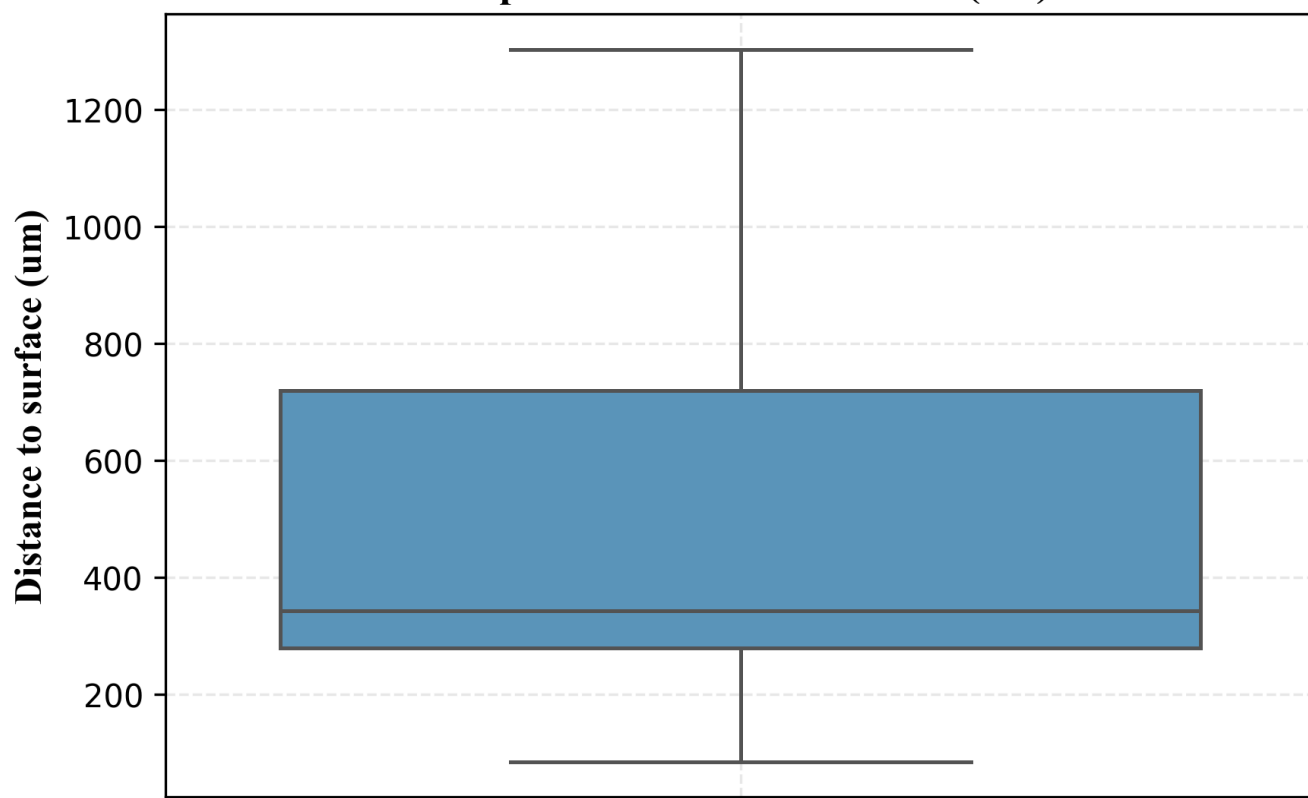
Boxplot of Defect depth (um)

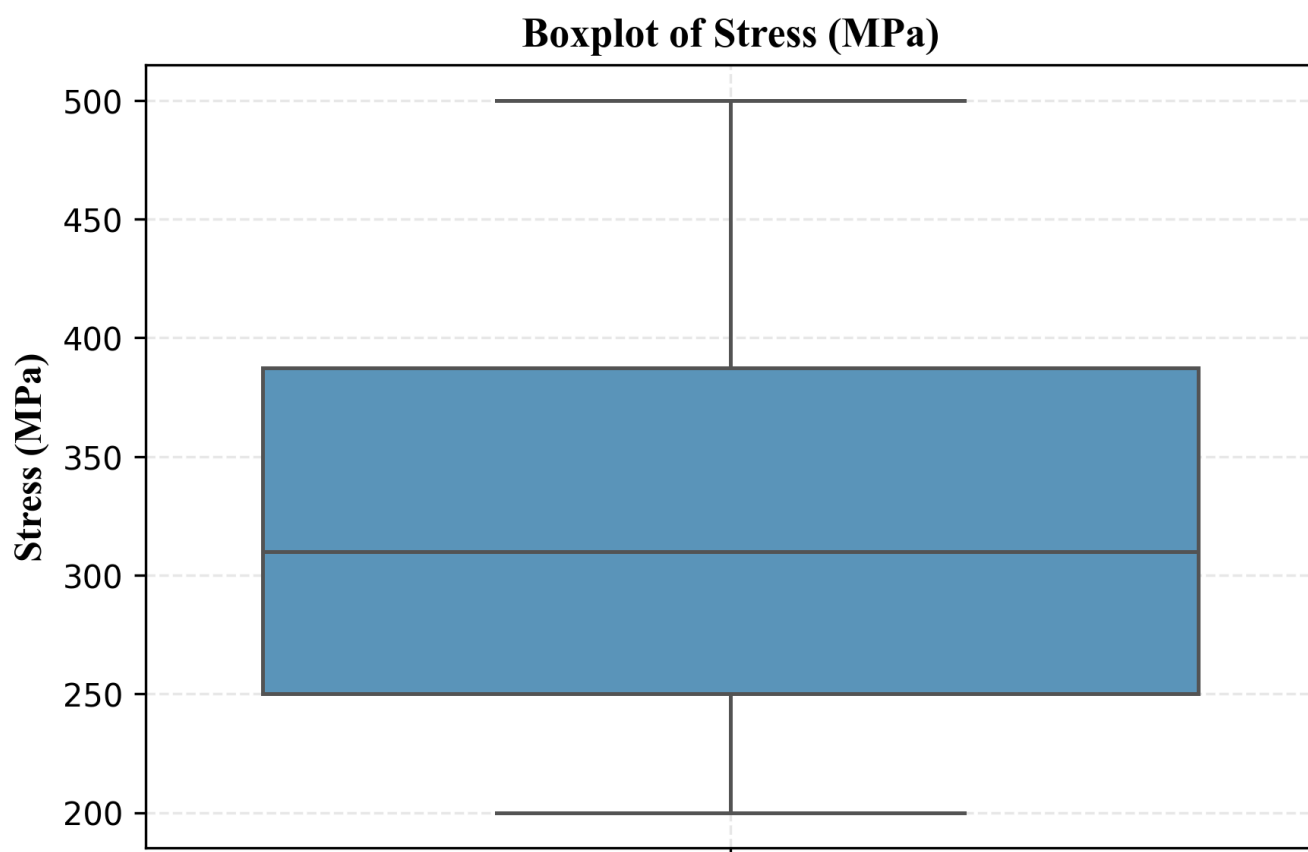
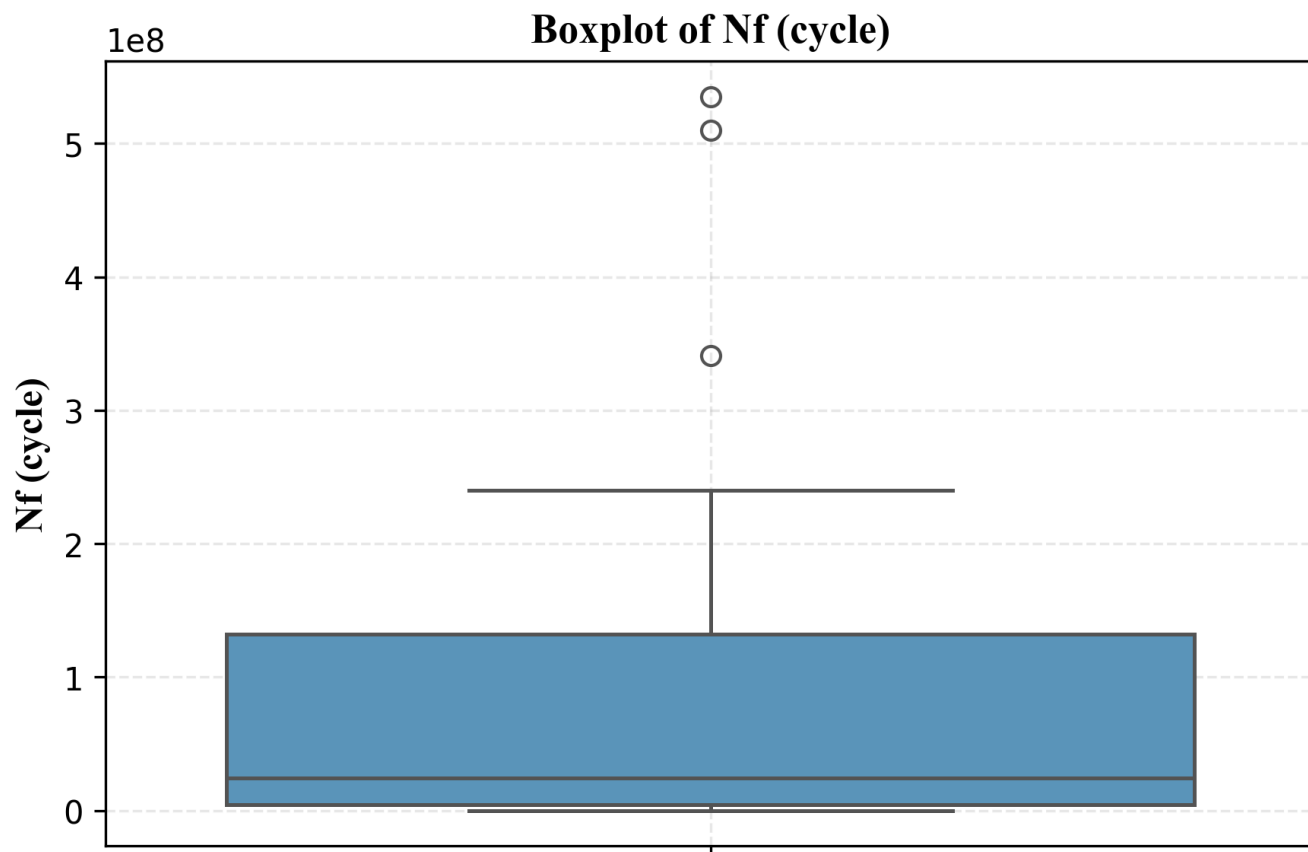


Boxplot of Defect size (um)

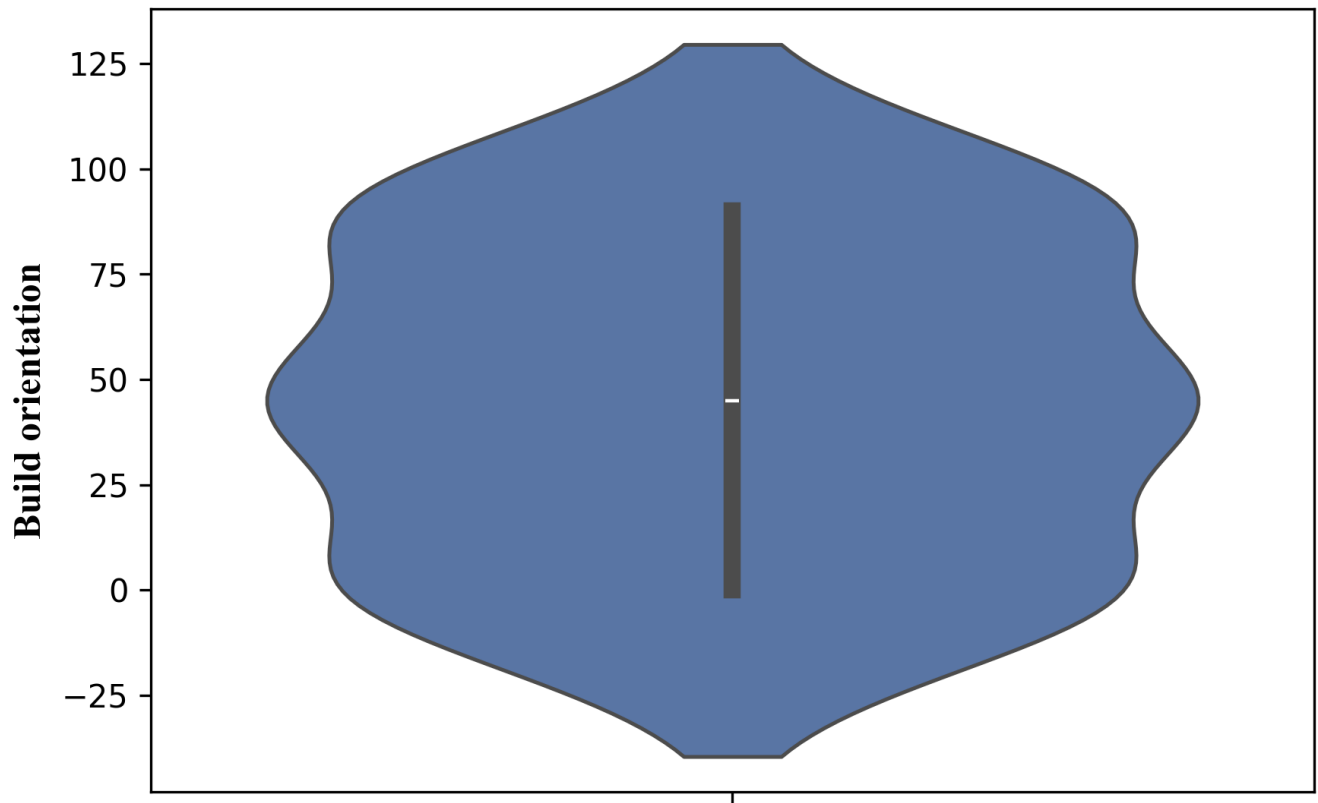


Boxplot of Distance to surface (um)

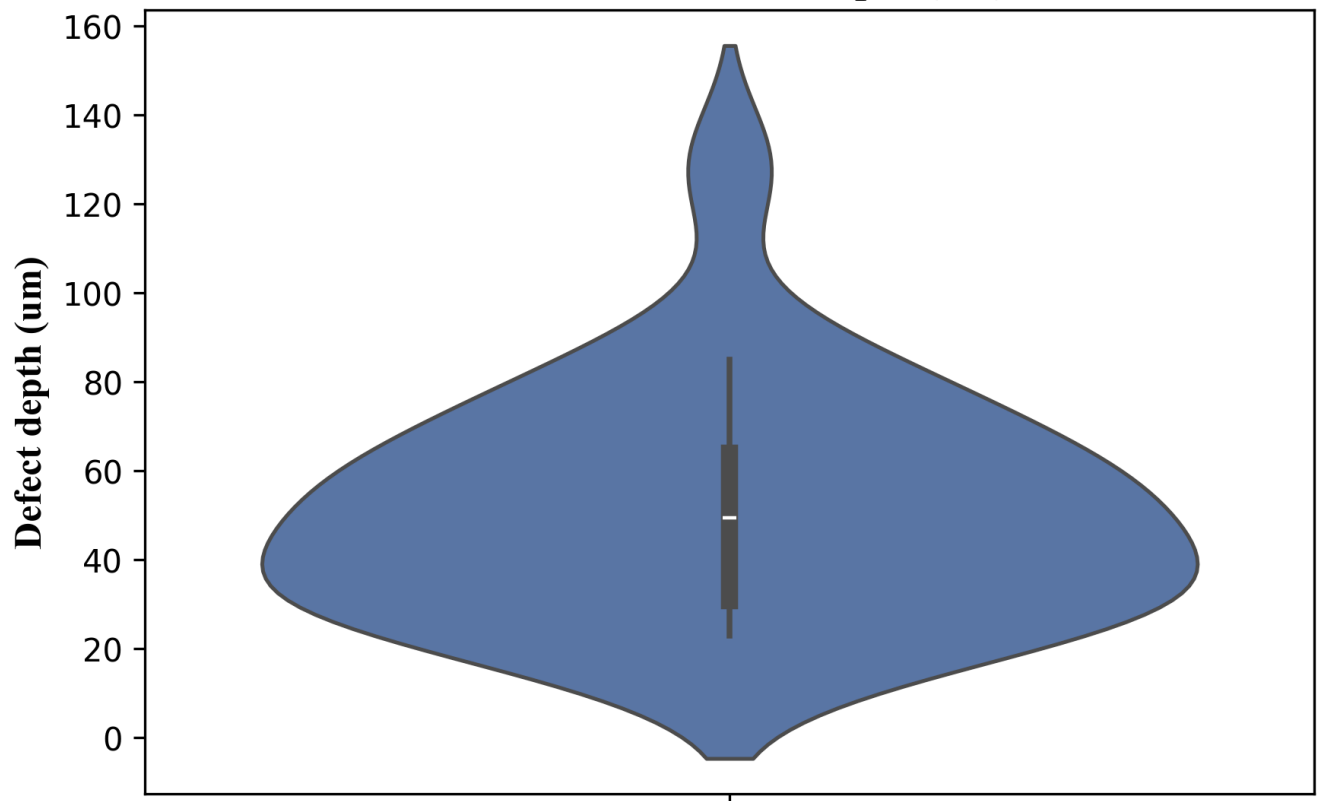




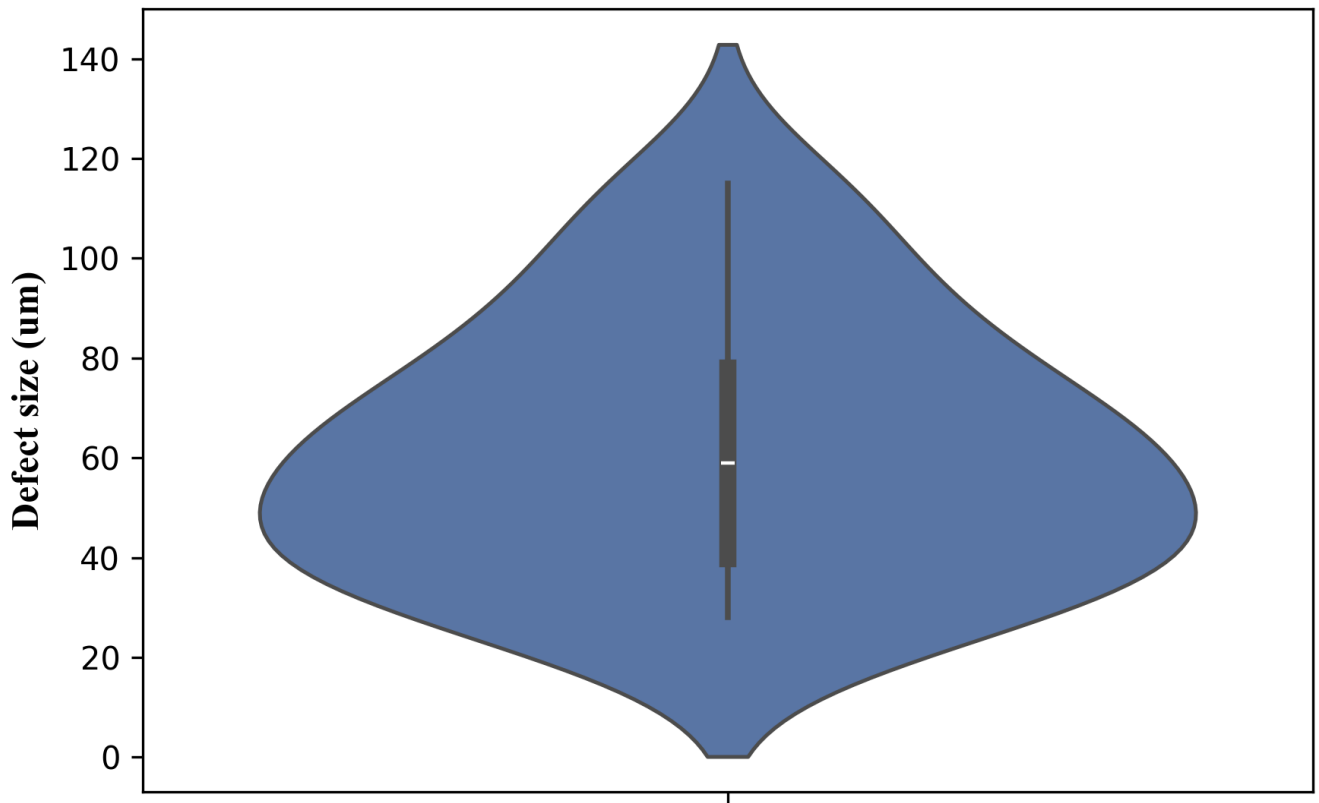
Violin Plot of Build orientation



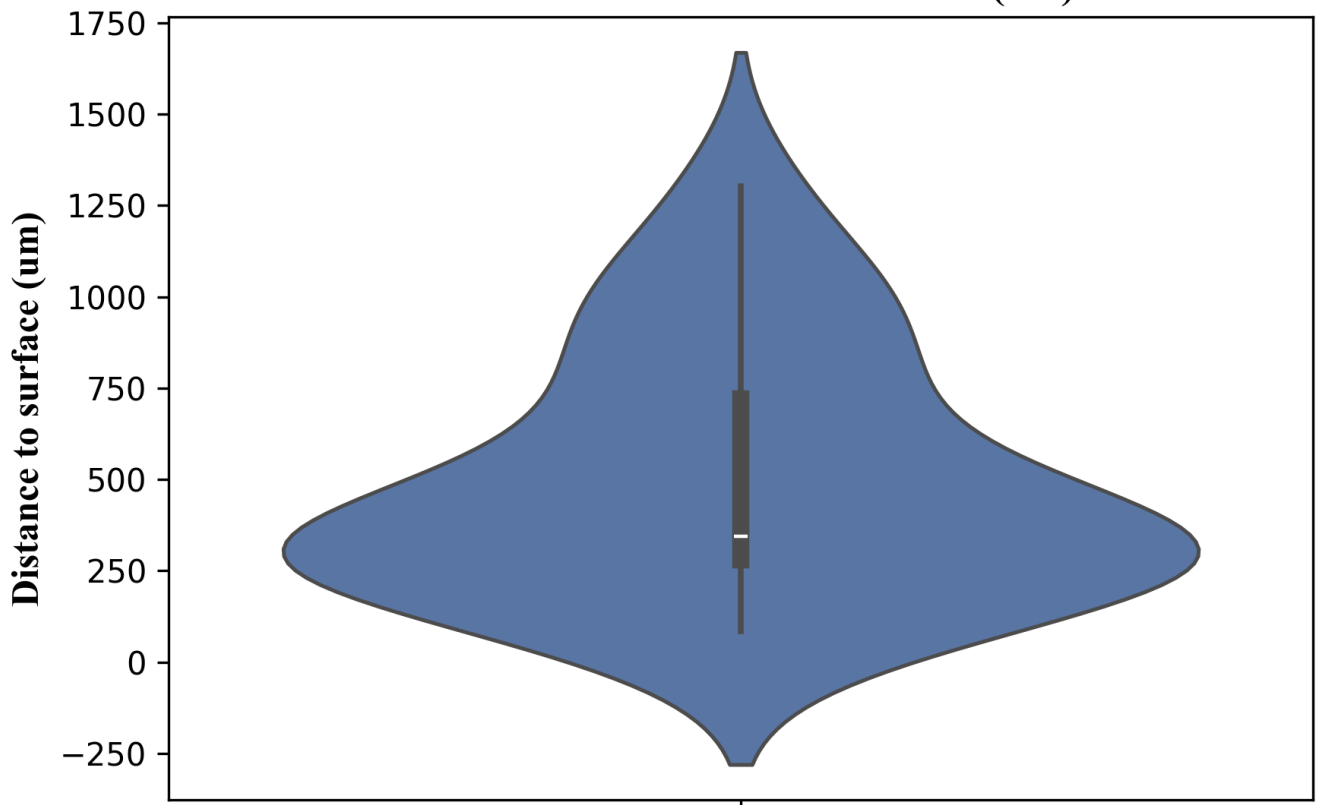
Violin Plot of Defect depth (um)

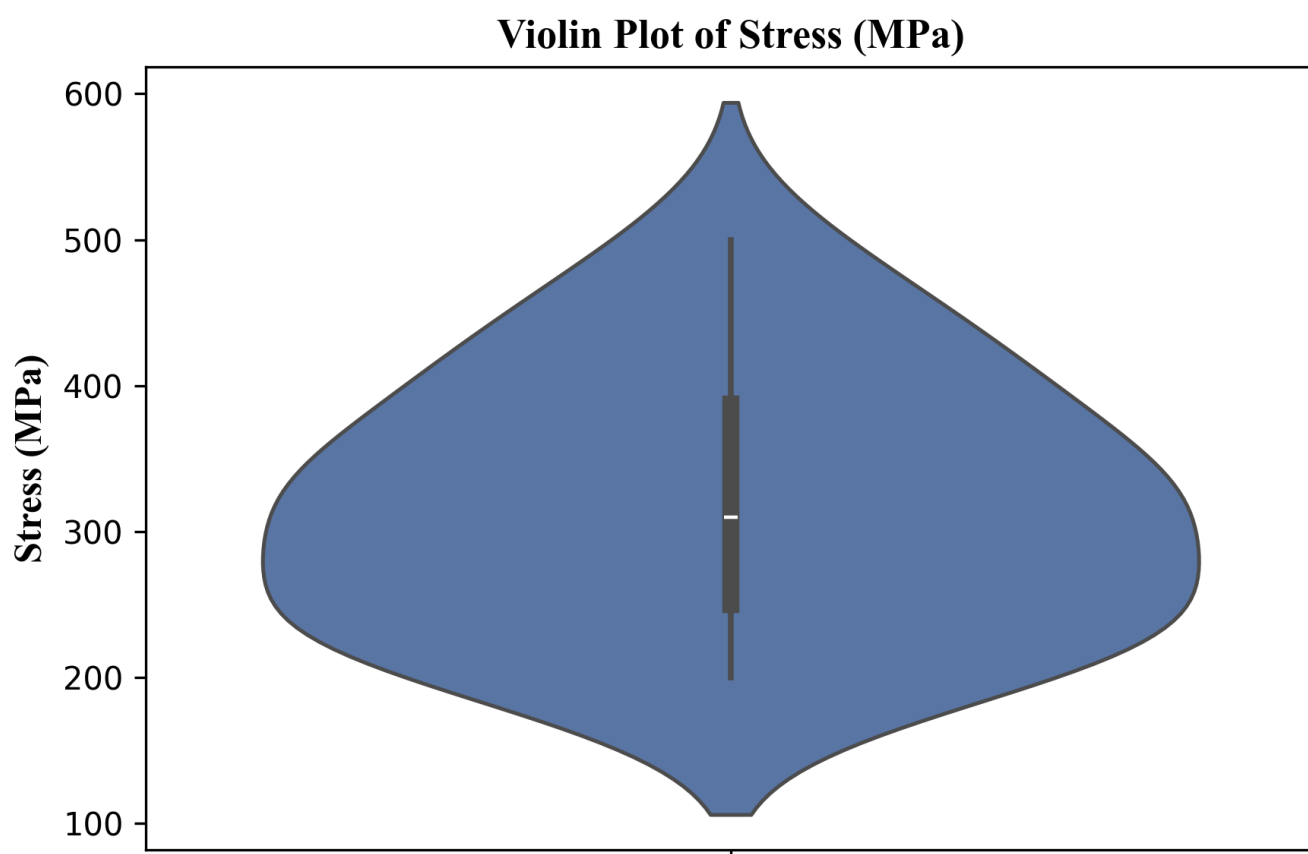
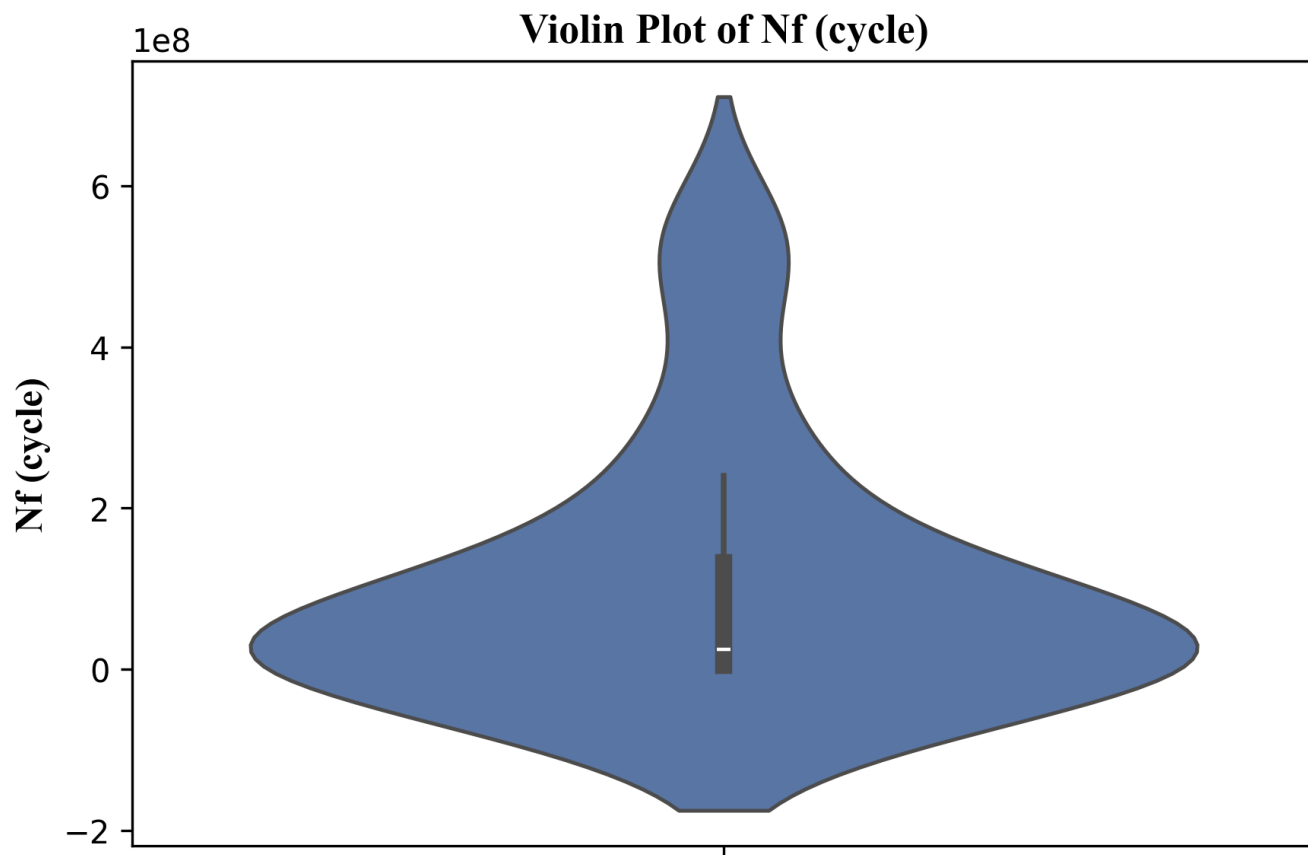


Violin Plot of Defect size (um)

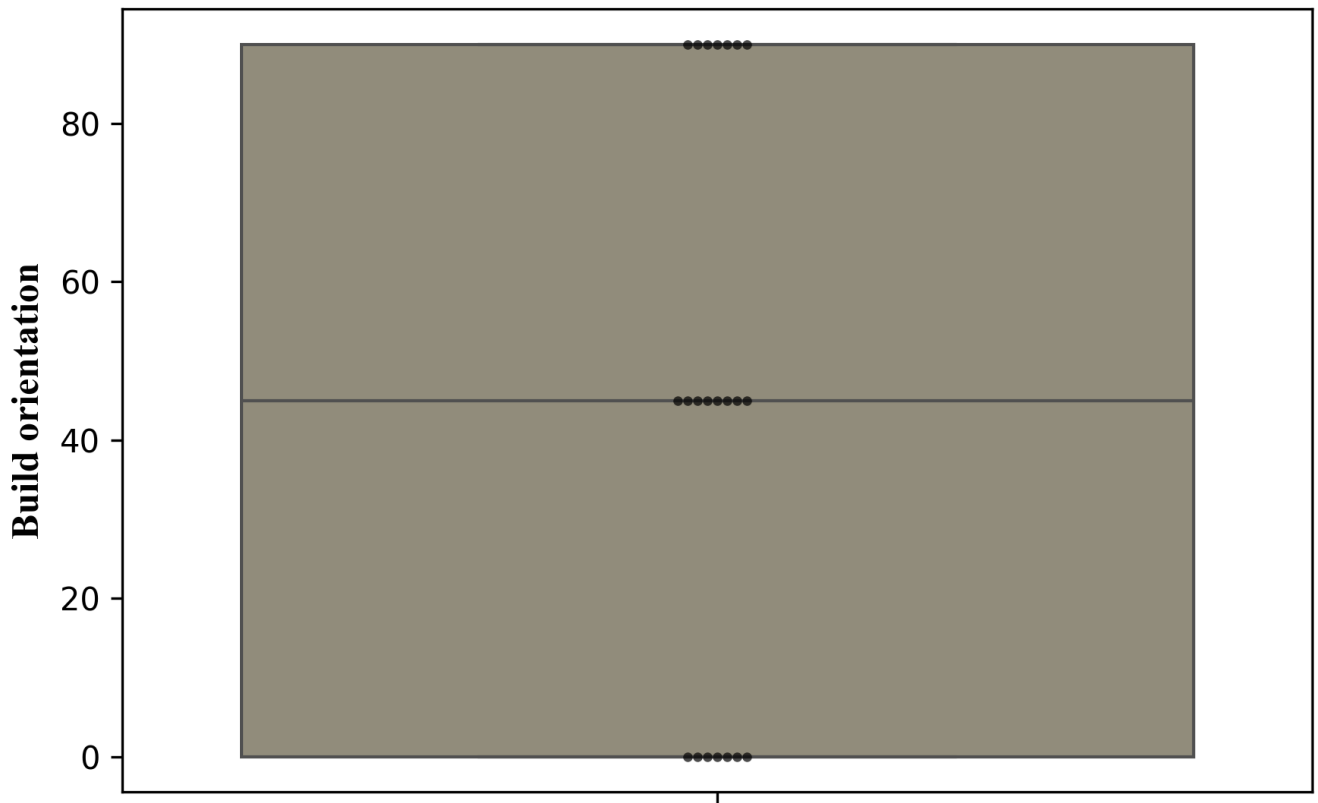


Violin Plot of Distance to surface (um)

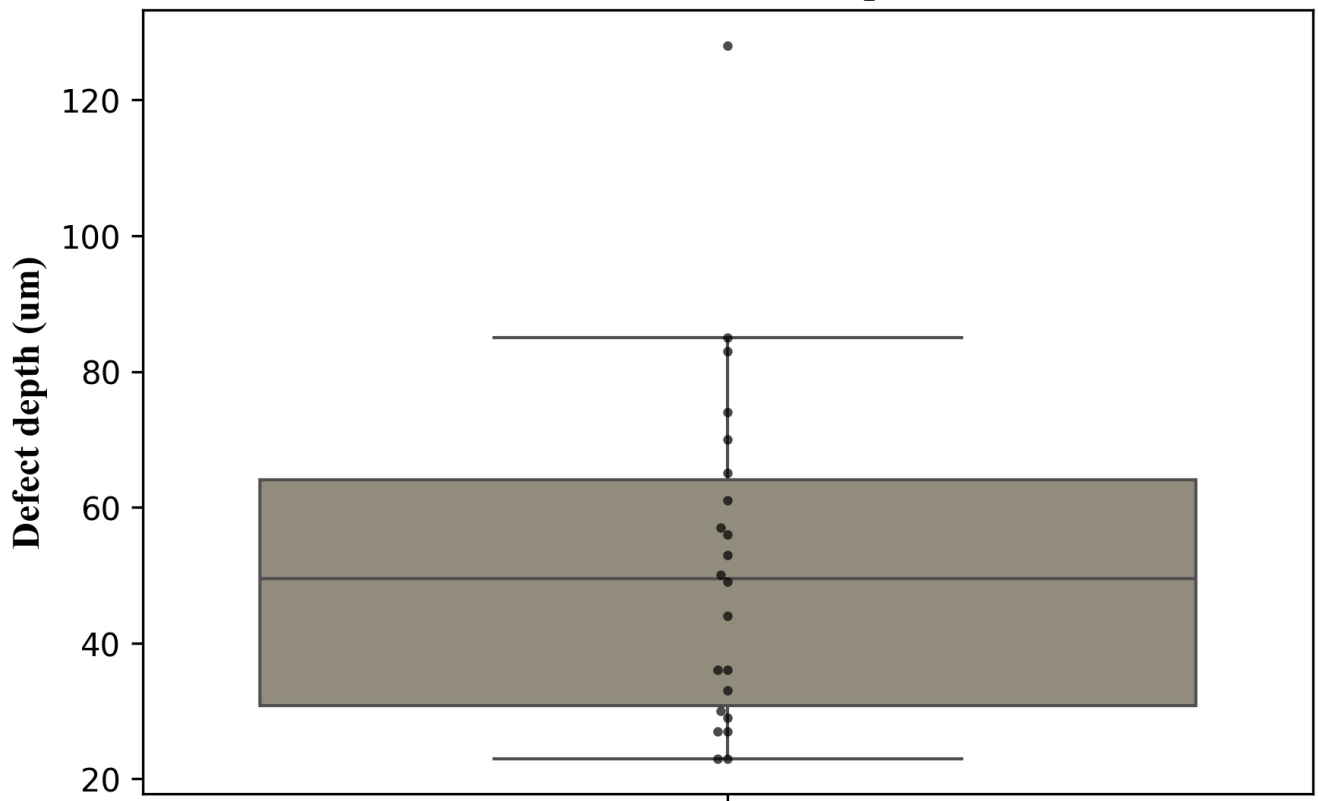




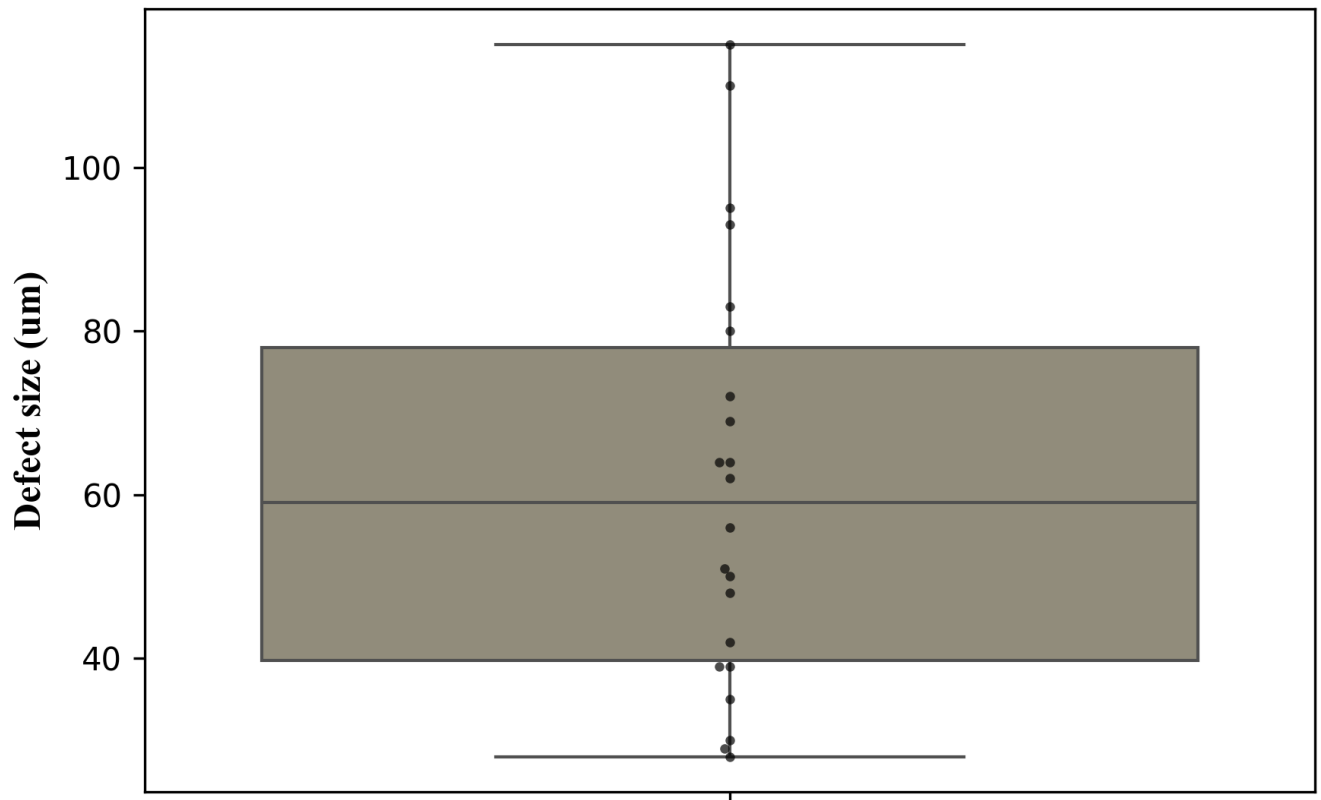
Swarm Plot of Build orientation



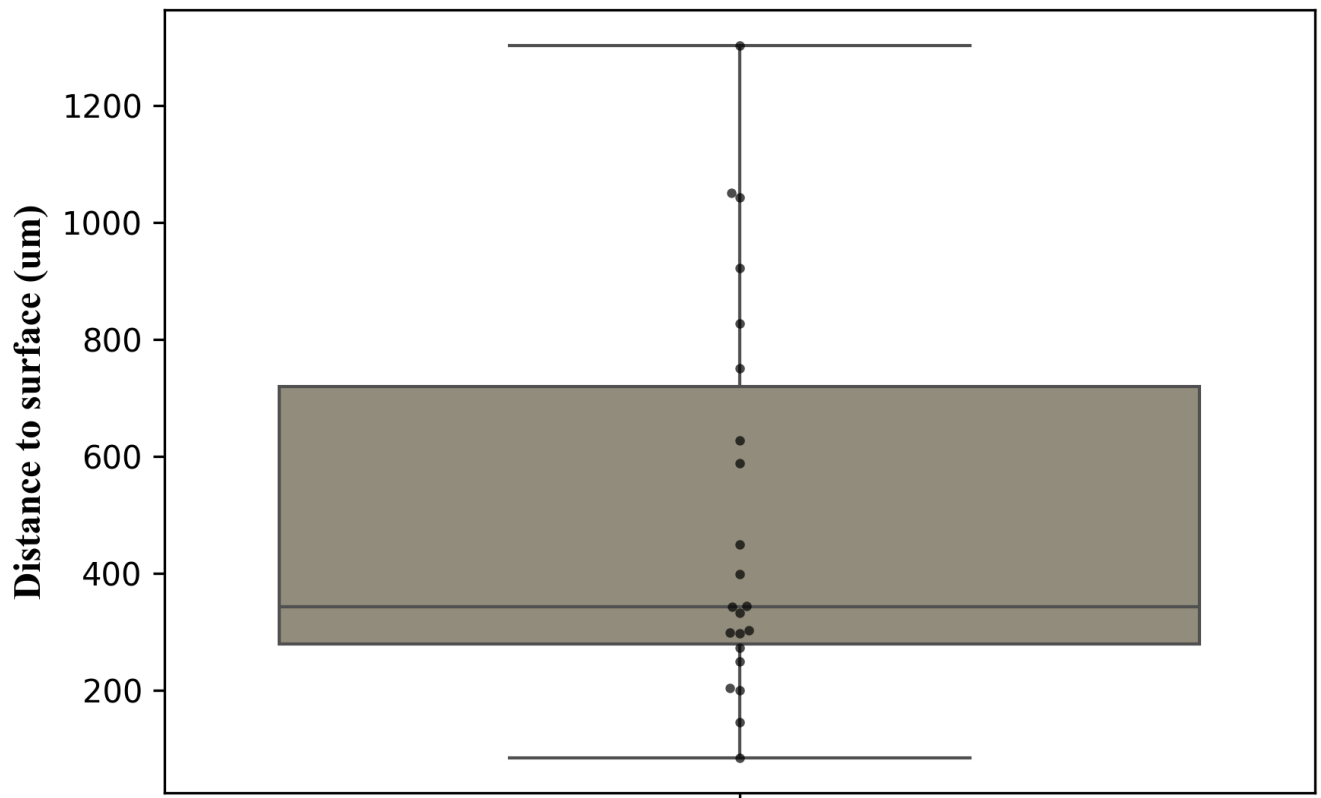
Swarm Plot of Defect depth (um)

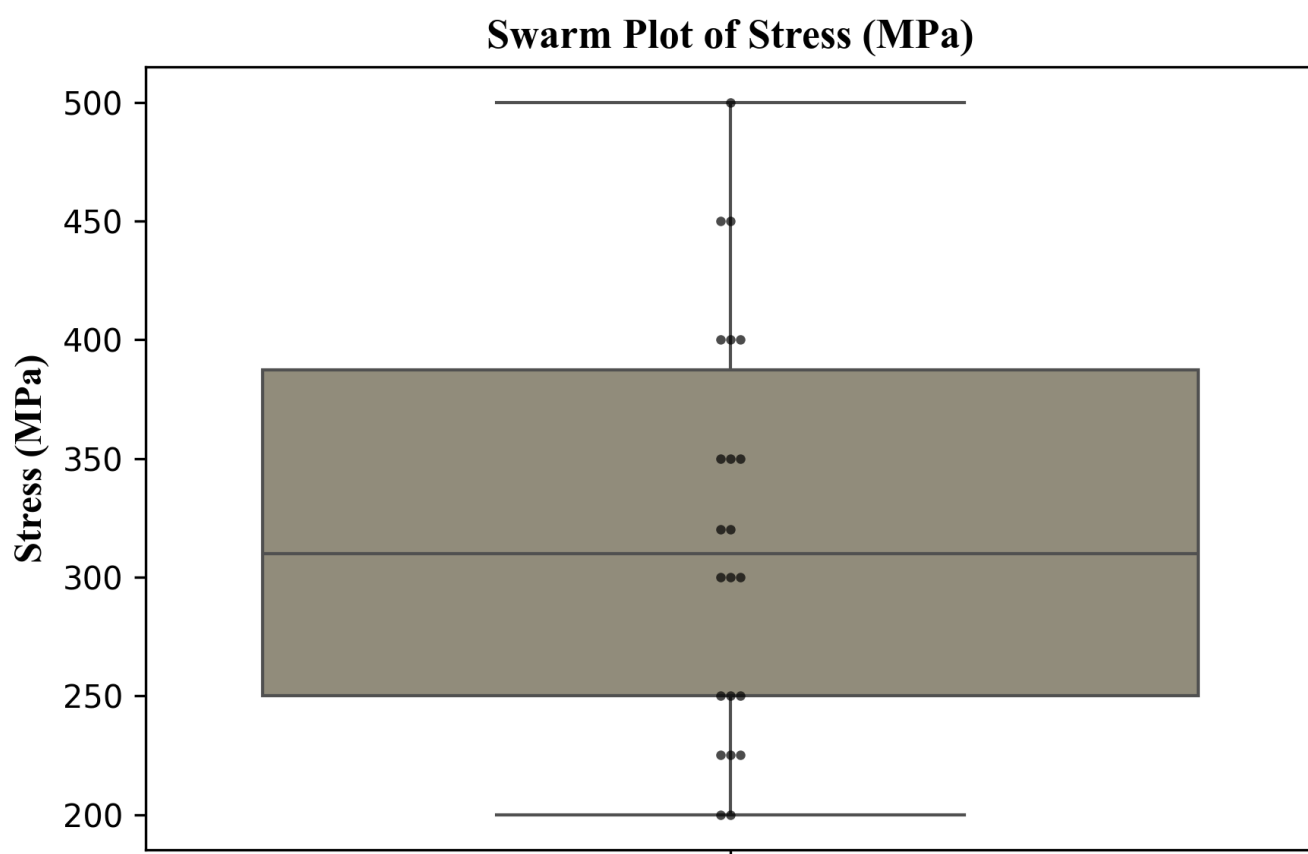
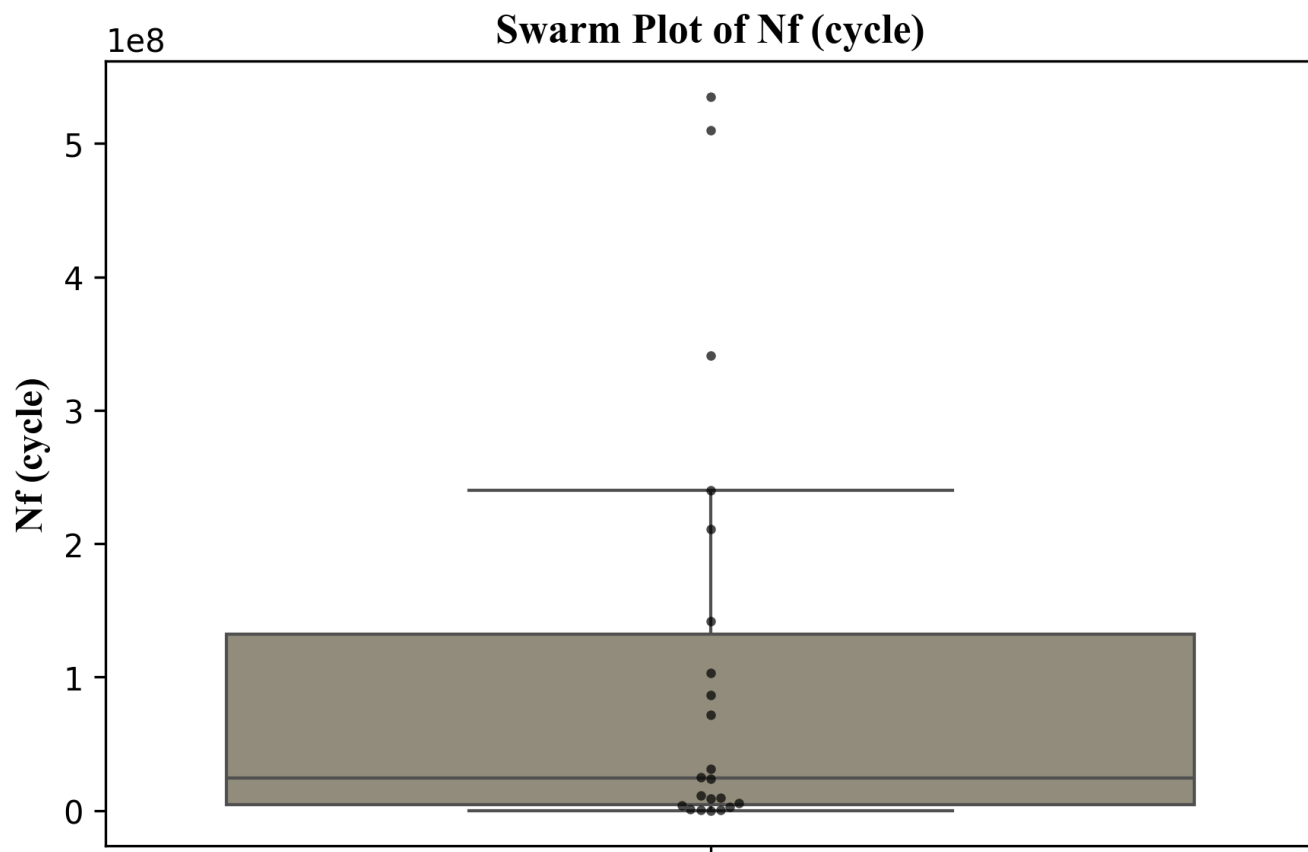


Swarm Plot of Defect size (um)

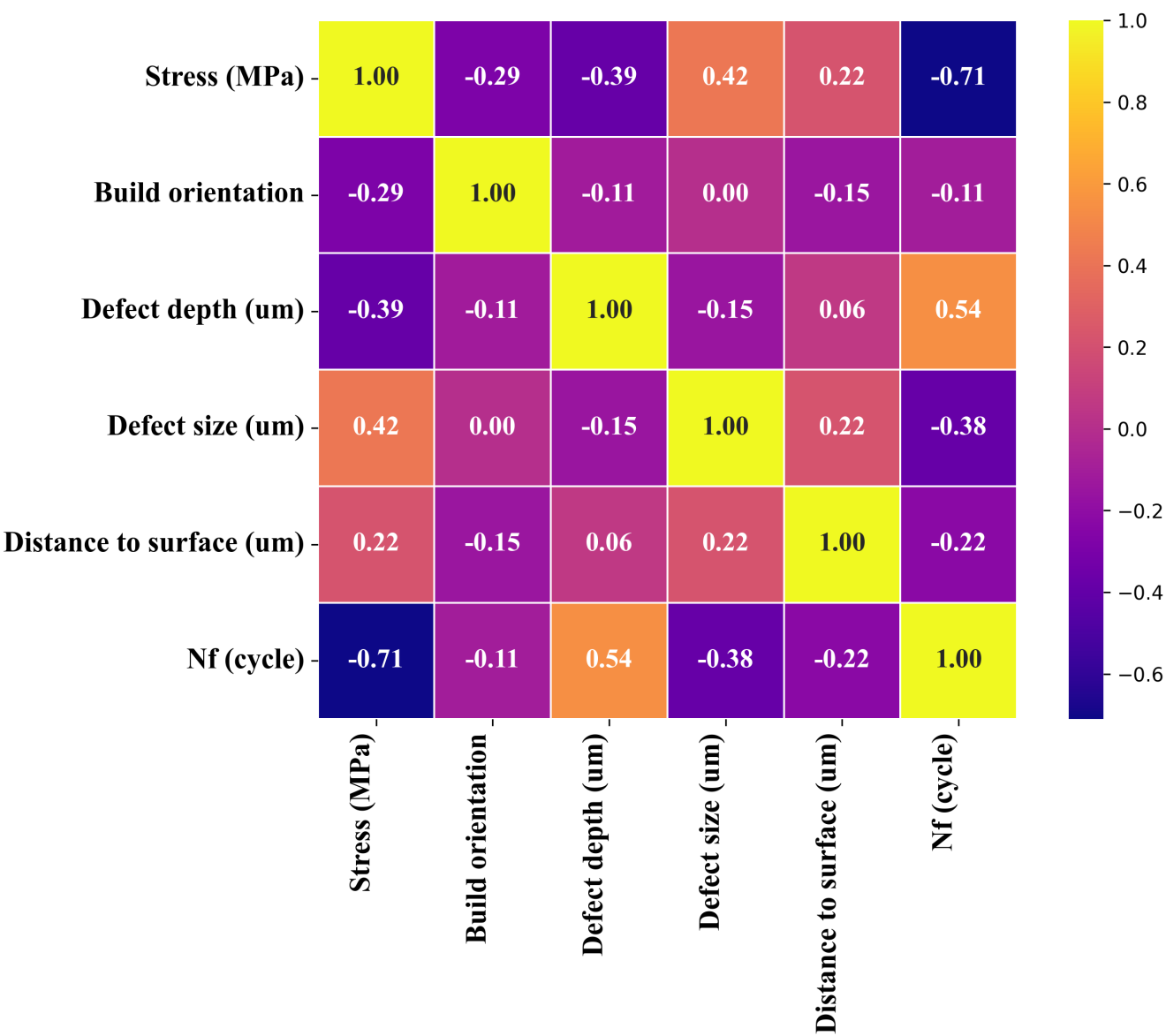


Swarm Plot of Distance to surface (um)

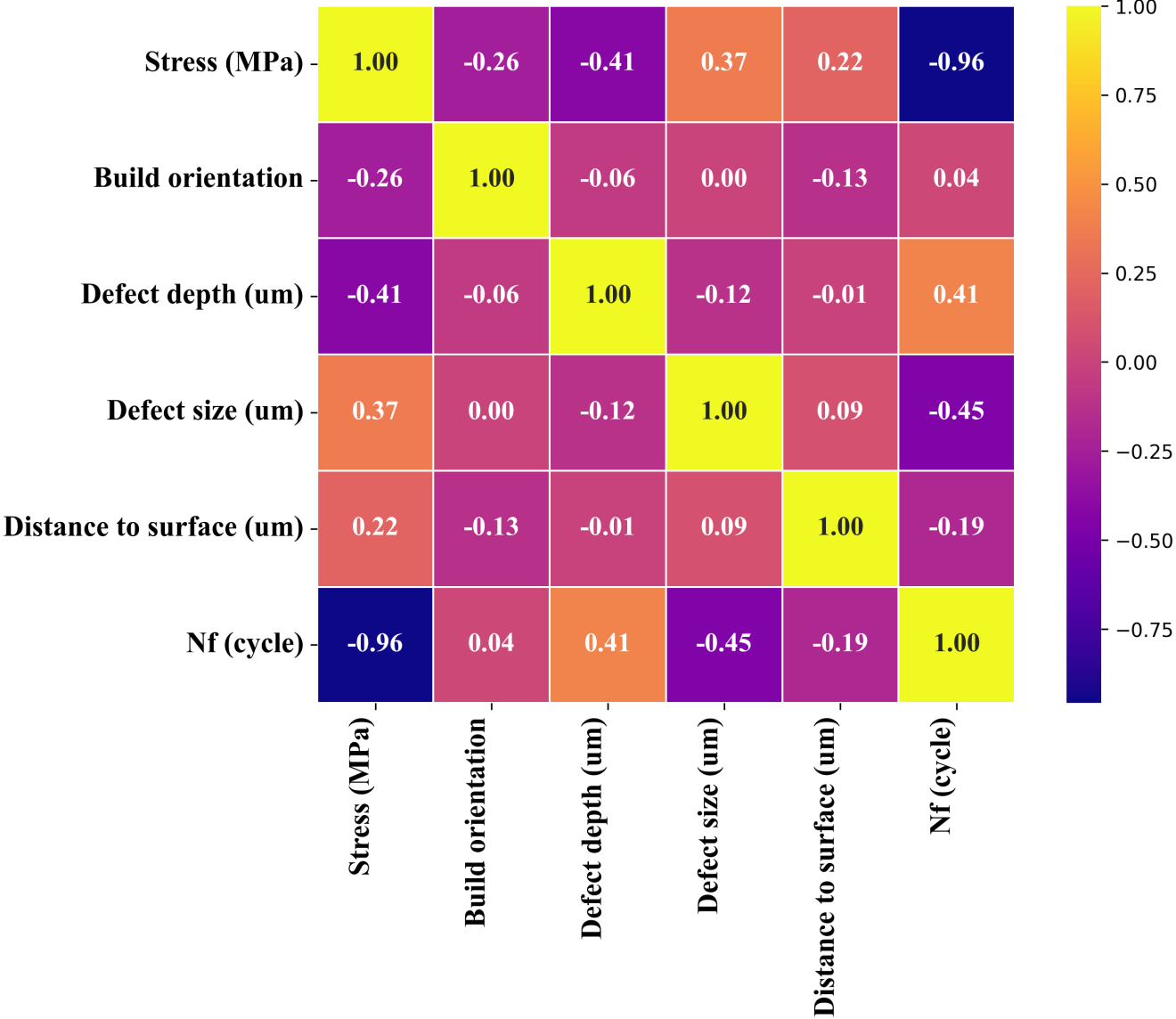




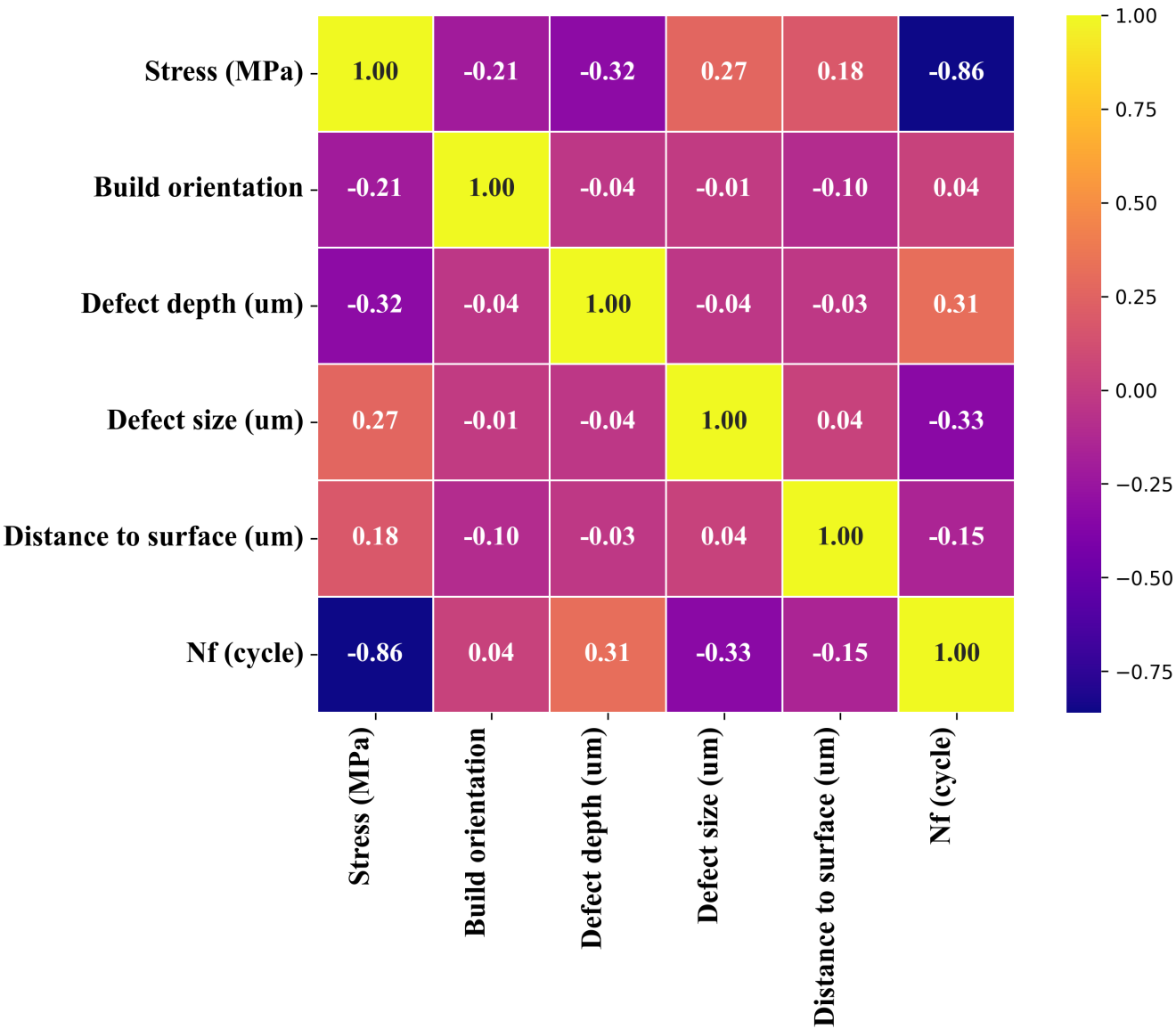
Pearson Correlation Matrix



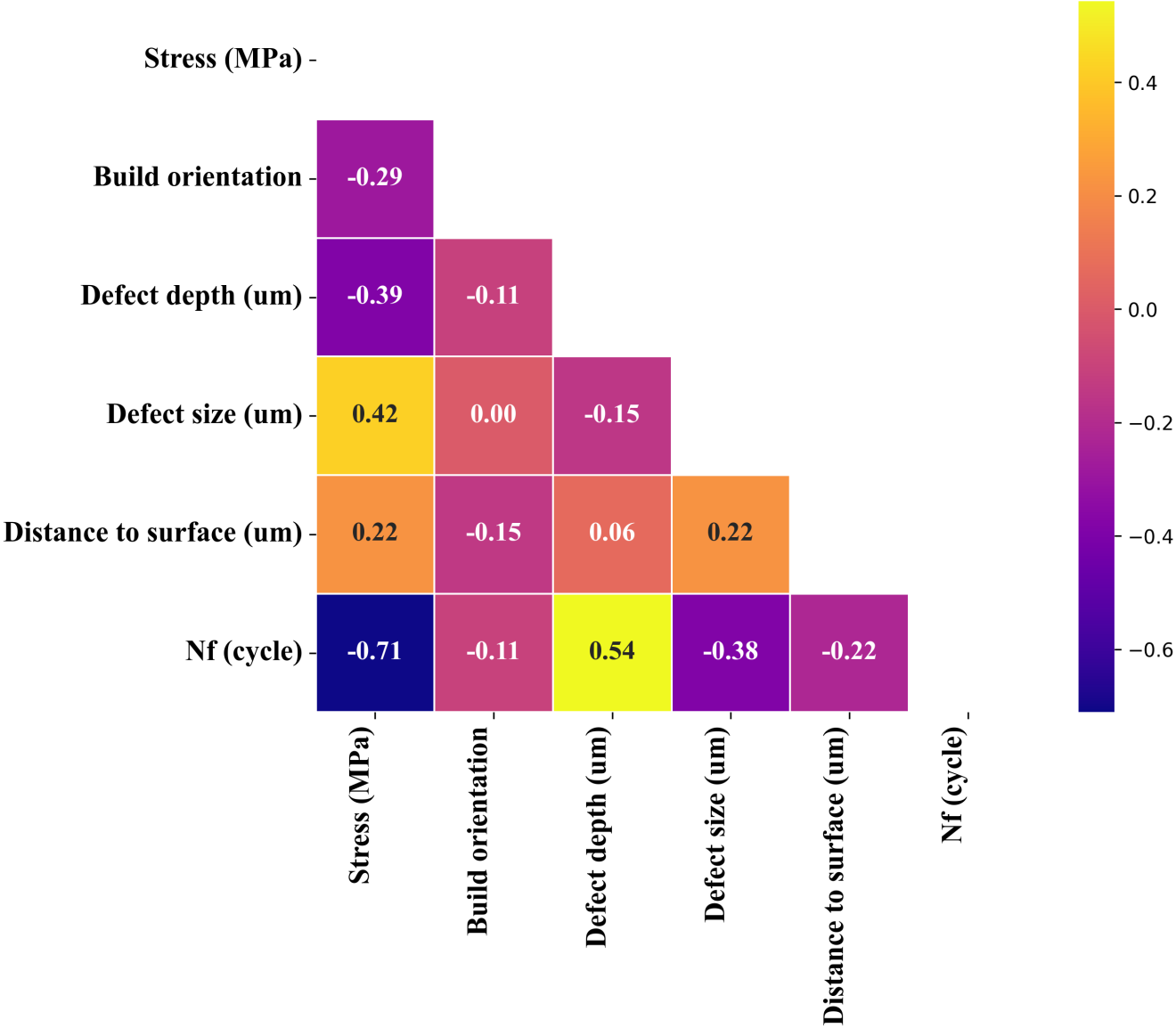
Spearman Correlation Matrix



Kendall Correlation Matrix

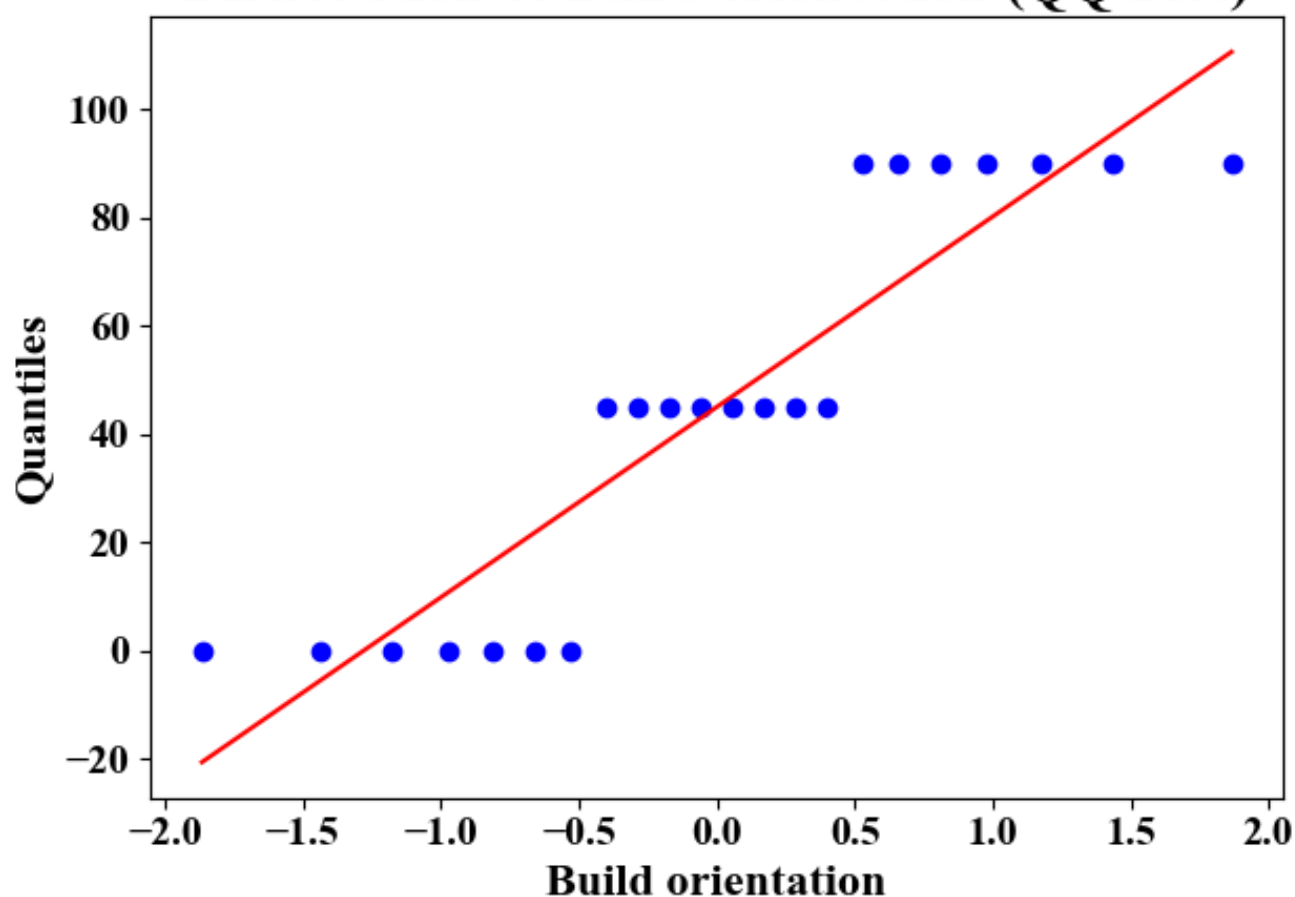


Pearson Correlation (Upper Triangle)

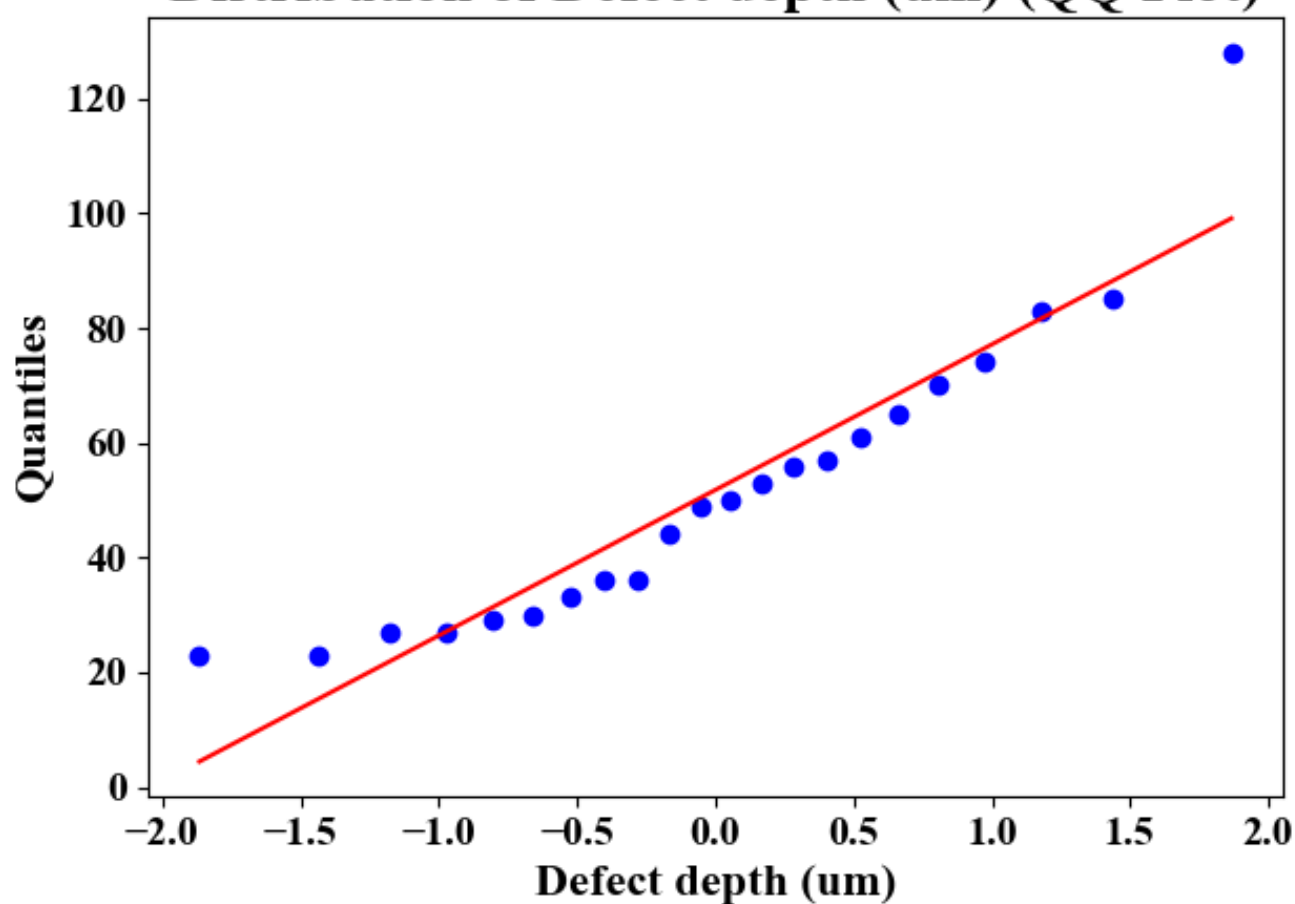


QQ Plots

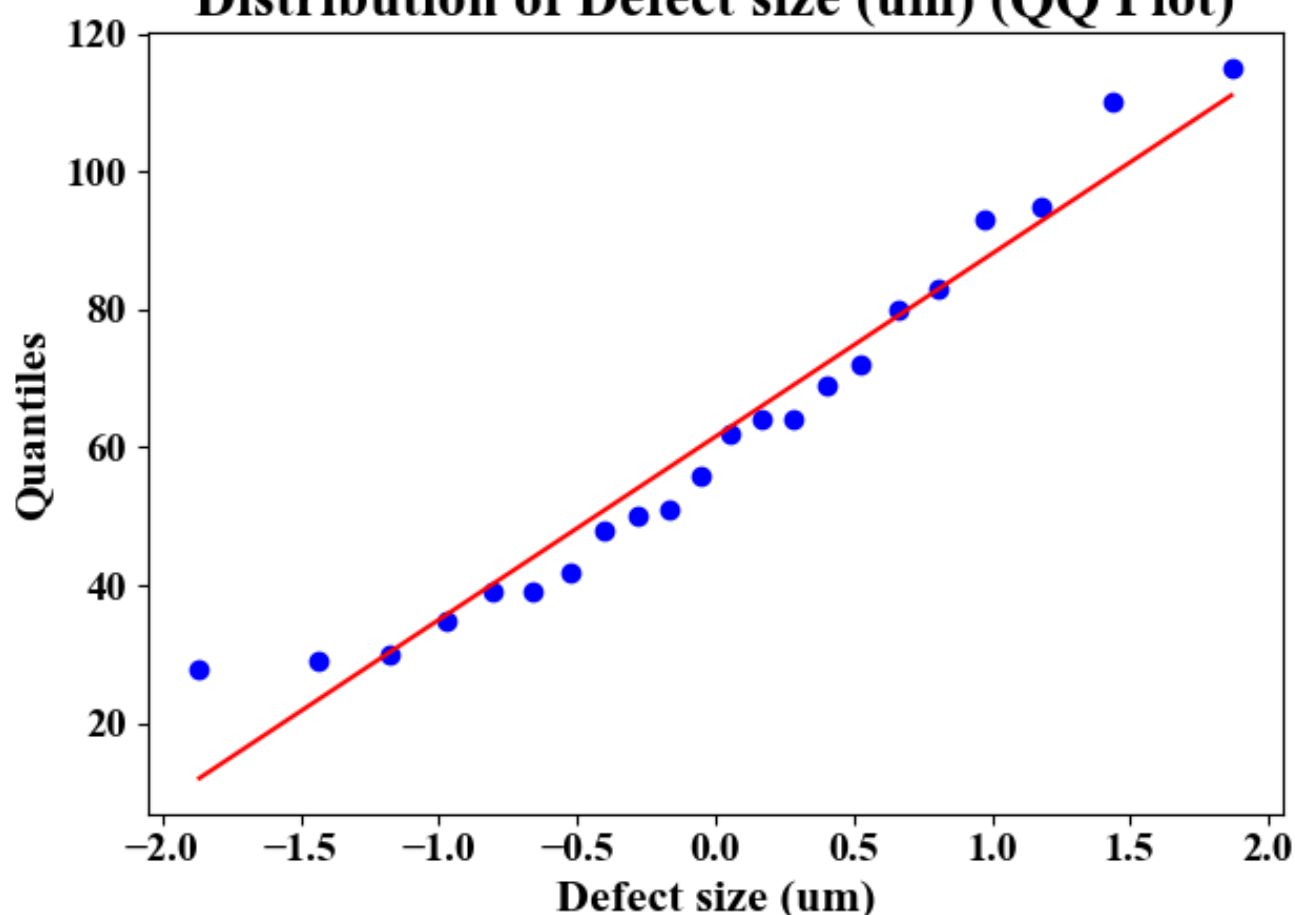
Distribution of Build orientation (QQ Plot)



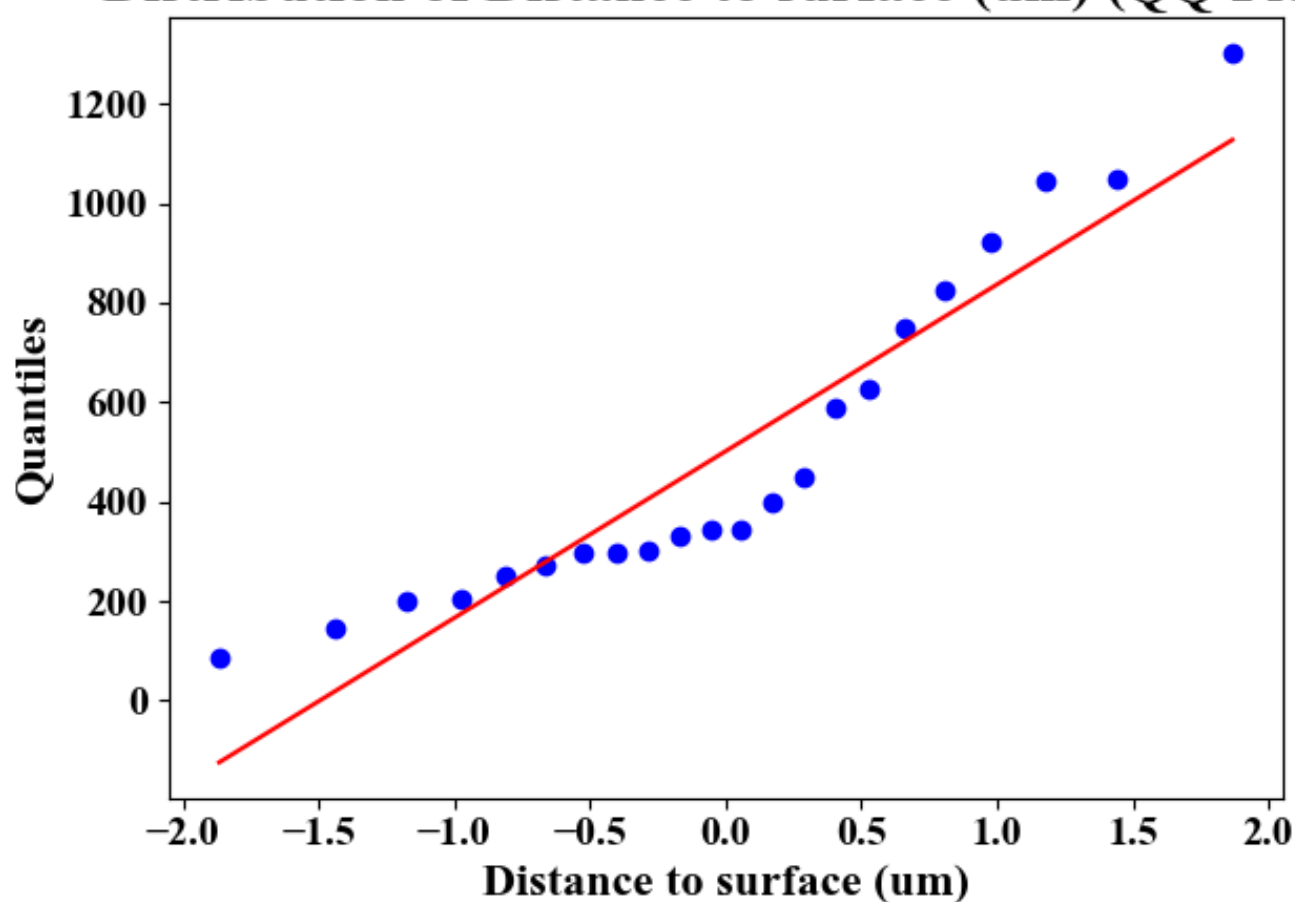
Distribution of Defect depth (um) (QQ Plot)



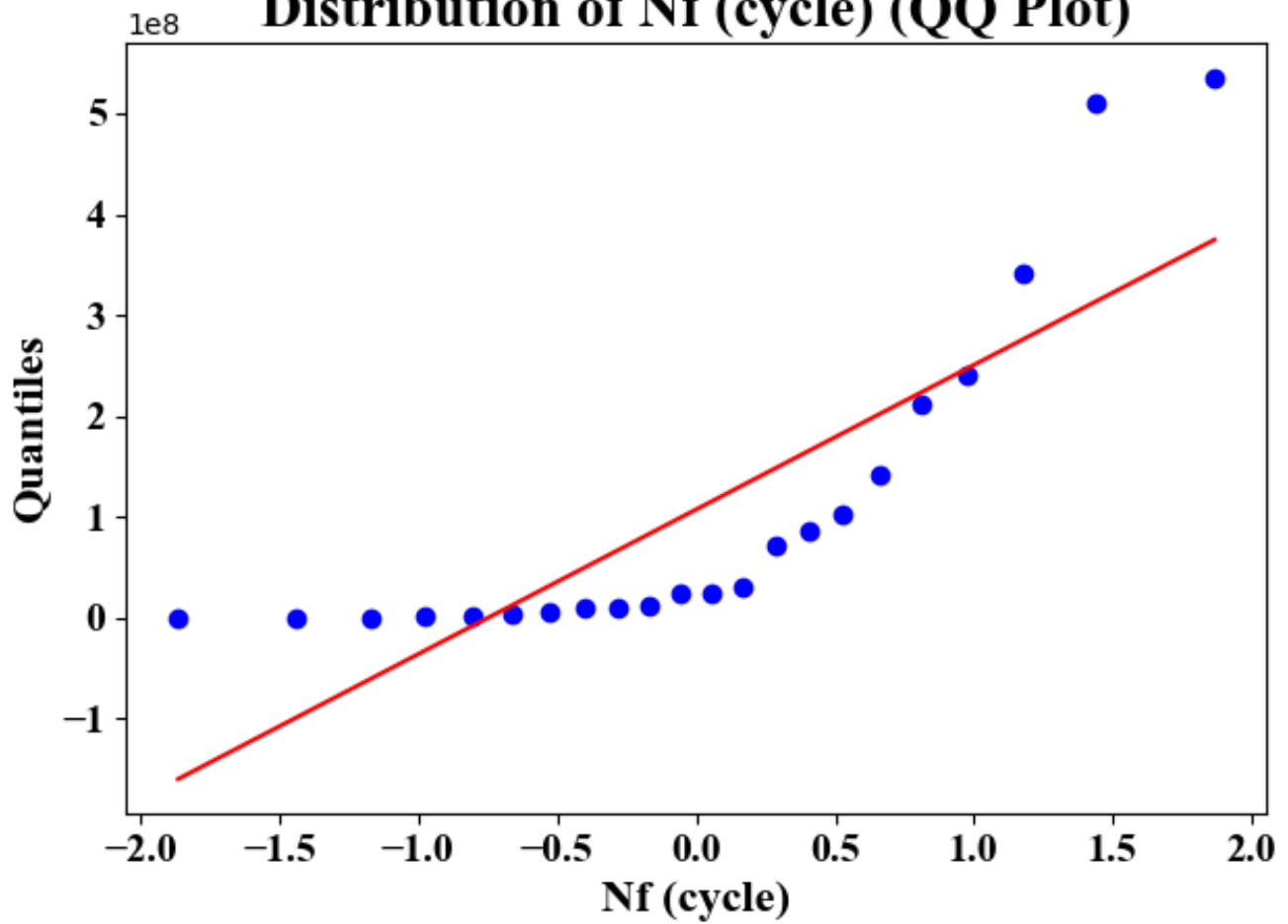
Distribution of Defect size (um) (QQ Plot)



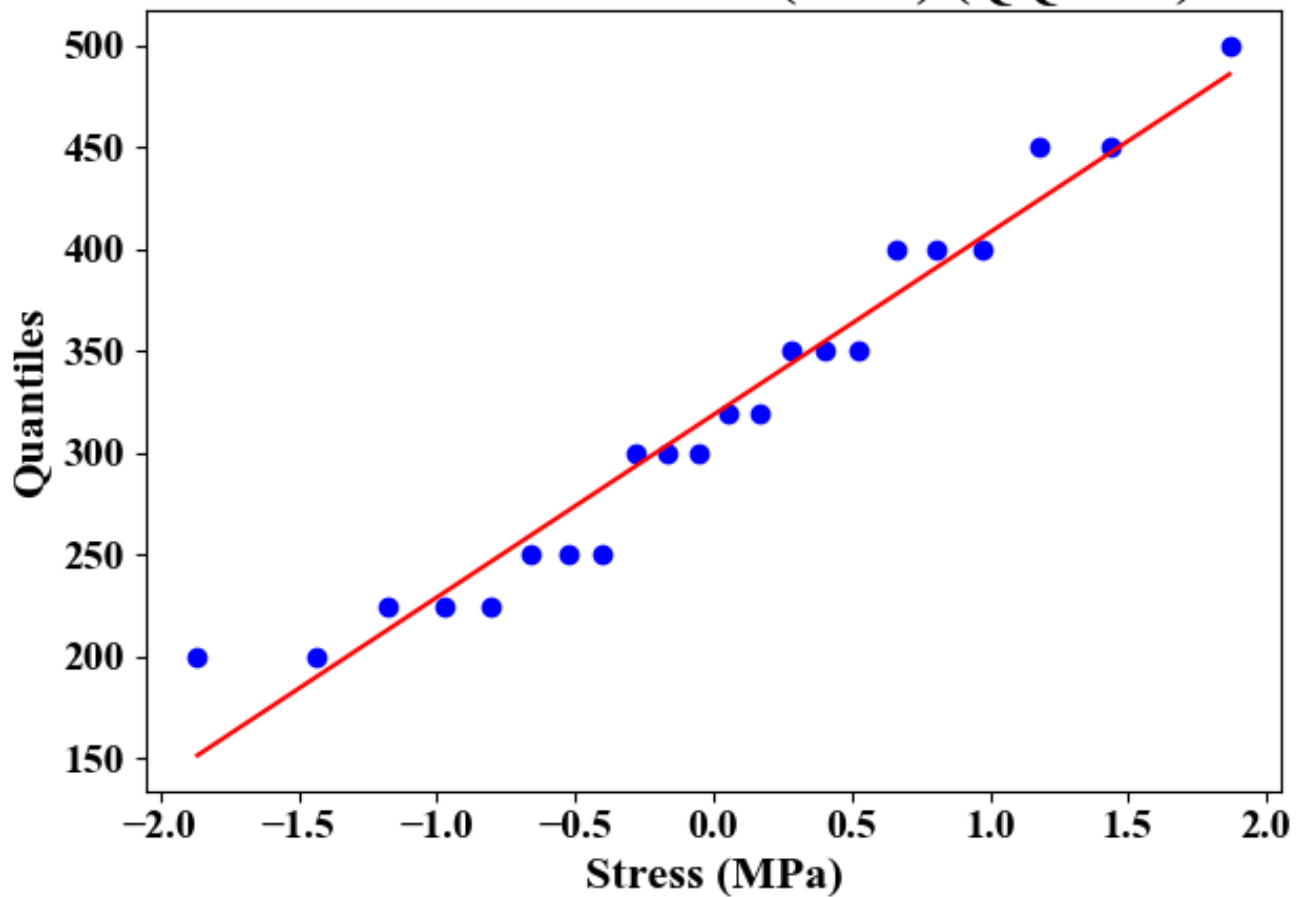
Distribution of Distance to surface (um) (QQ Plot)



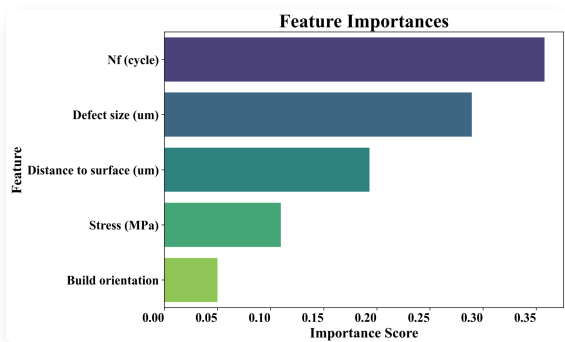
Distribution of Nf (cycle) (QQ Plot)



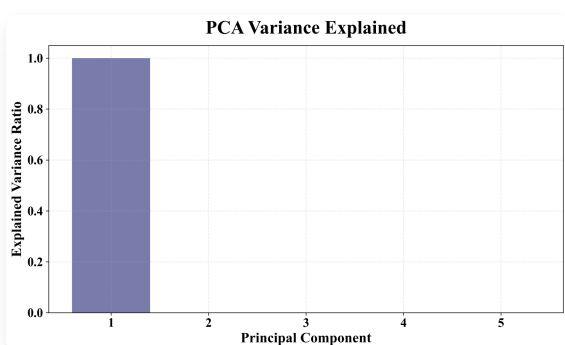
Distribution of Stress (MPa) (QQ Plot)



Feature Importance



PCA Plot



t-SNE Plot

