



Supplementary Figure 5: Ratio-metric analysis of peaks pertaining to lipid peroxidation, carbohydrate and nucleic acid content from Raman spectral data obtained from breast cancer cells grown on CaF_2 slide. **(A)** HER2+ breast cancer cells provided higher spectral ratios at $1741/1656 \text{ cm}^{-1}$ suggesting a higher degree of lipid peroxidation, when compared to TNBC/HER2- cells (***, $p < 0.001$). **(B)** TNBC/HER2- cells yielded a notable rise for the $946/830 \text{ cm}^{-1}$ ratio compared to HER2+ cells, indicating increased presence of carbohydrates relative to amino acids for these cells (***, $p < 0.001$). **(C)** The $782/830 \text{ cm}^{-1}$ ratio was prominently elevated for TNBC/HER2- cells compared to HER2+ cells, signifying a significant increase of nucleic acid content in these cell types (***, $p < 0.001$). The yellow line in the box plots represent the median value for each group, while the bottom and top edges of the box indicate the 25th and 75th percentiles, respectively. The bars of the box plot extend to the most extreme data points not considered outliers, and the outliers are plotted individually beyond the whisker bars.