

Identifying the responses from the estrogen receptor expressed MCF7 cells treated in anticancer drugs of different modes of action using live-cell FTIR spectroscopy

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Supplementary

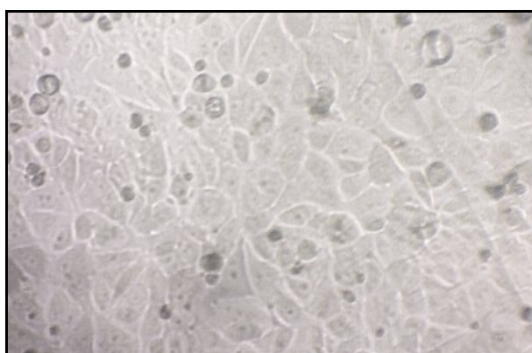
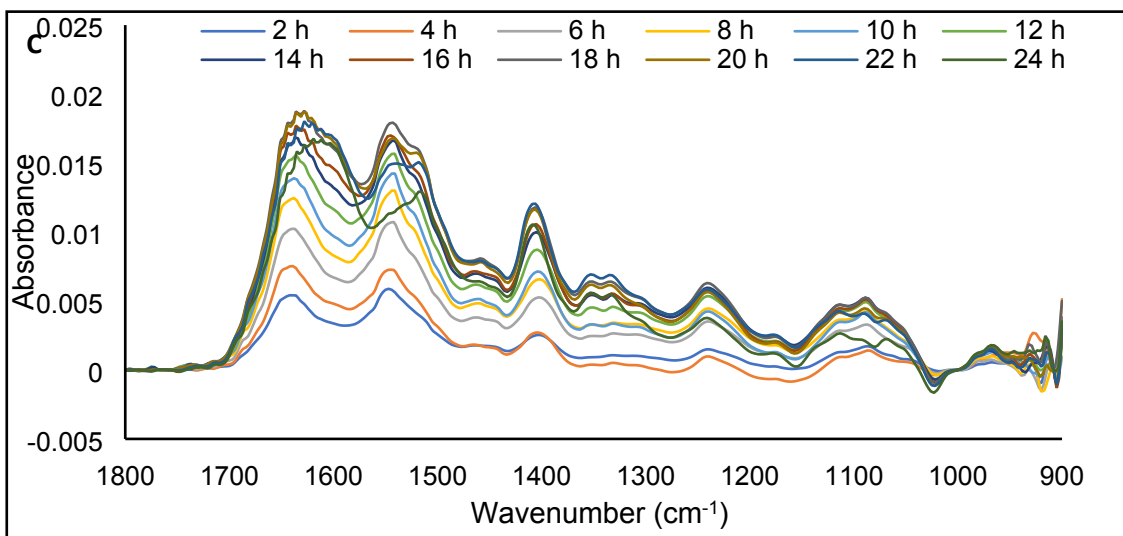
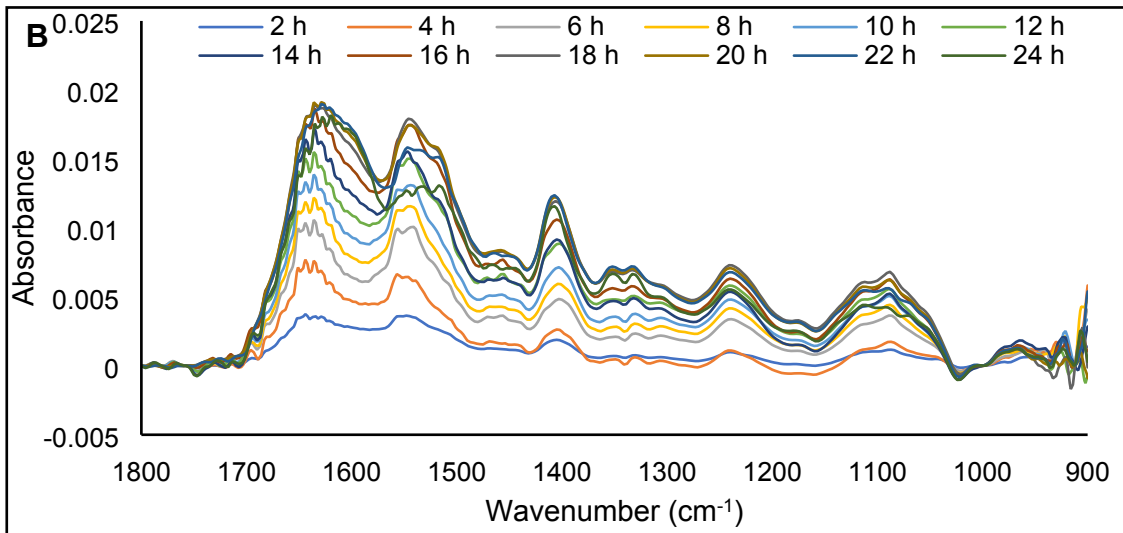
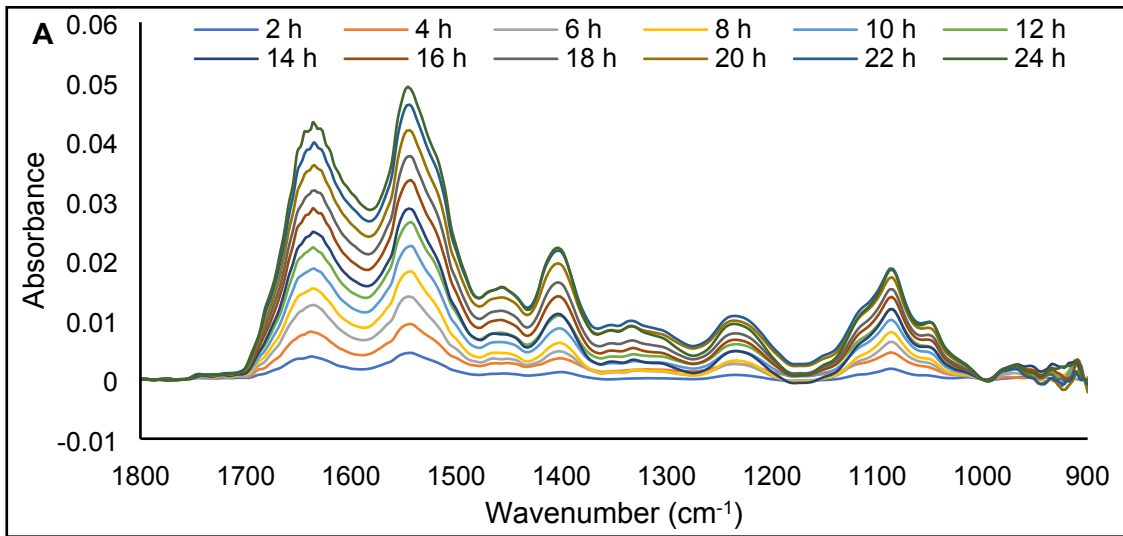


Figure S1: Visible image of MCF7 cells attached on the ZnS ATR crystal after 48 h of seeding.



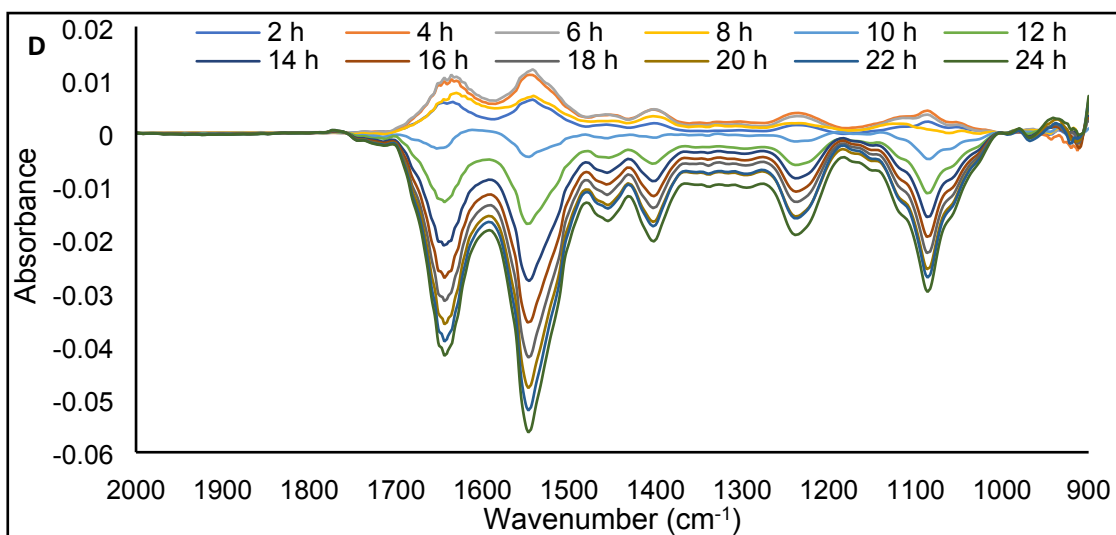


Figure S2: ATR-FTIR difference spectra of live MCF7 cells after exposure to 0.1% DMSO (drug vehicle; control(A)) and IC₅₀ of tamoxifen (B), toremifene (C), and doxorubicin (D) for 24 h.

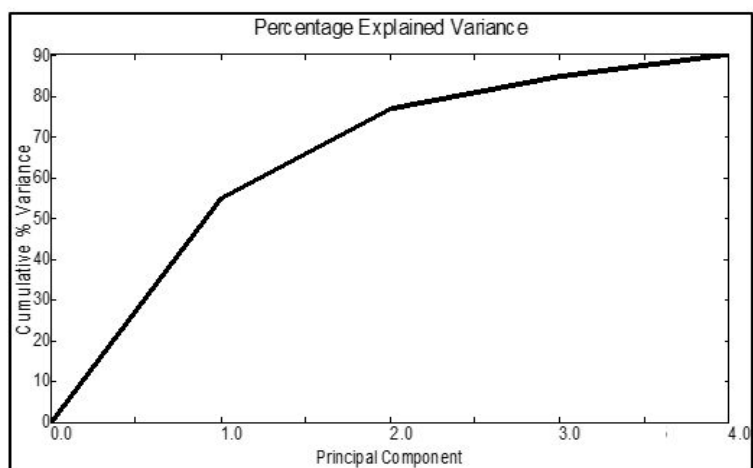


Figure S3: Percentage variance explained as function of the number of principal components of vector normalised difference spectra of live MDA-MB-231 cells for the 2nd h exposure to IC50.

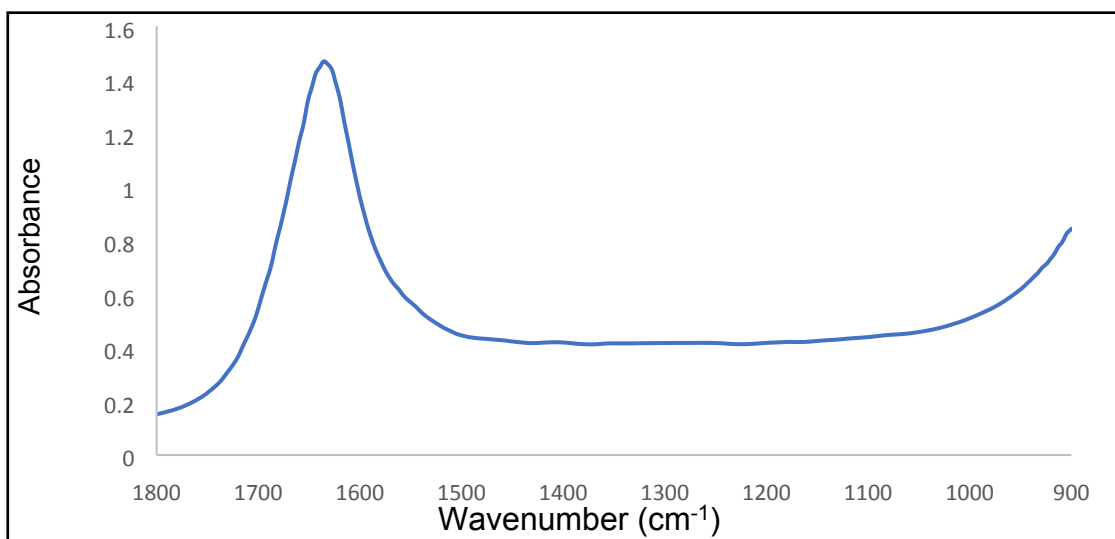
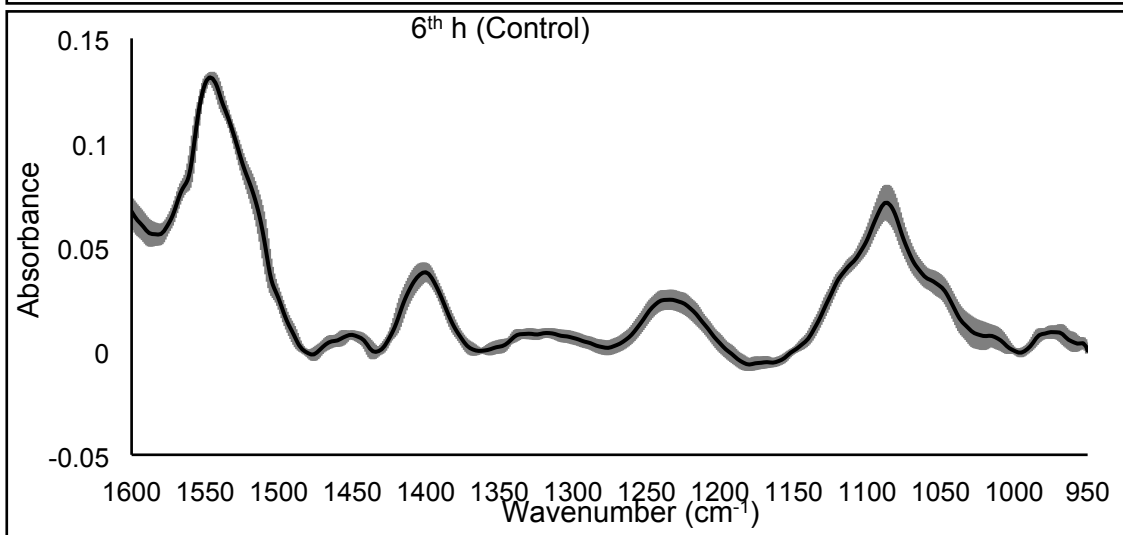
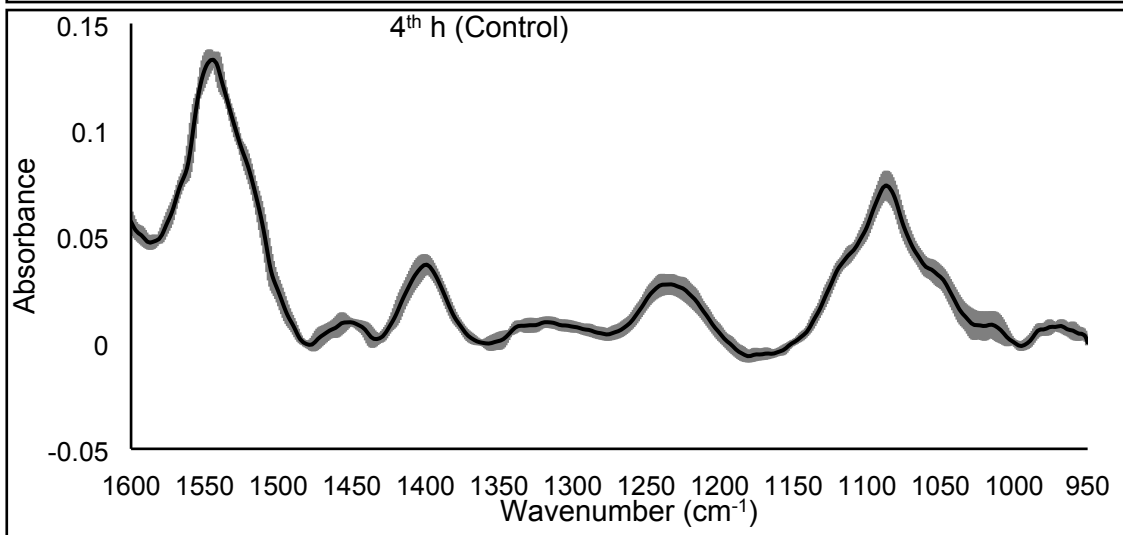
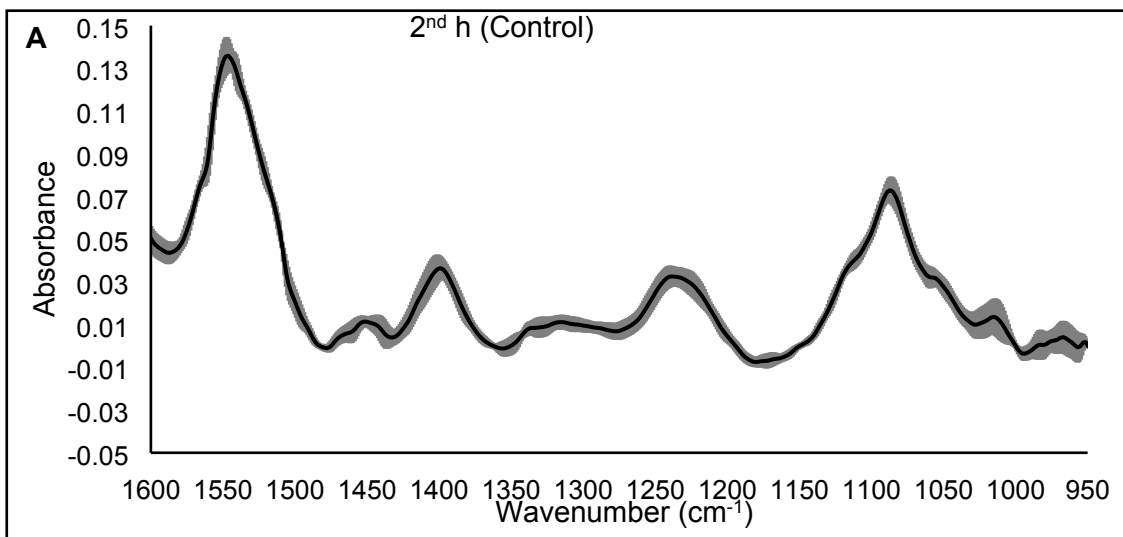
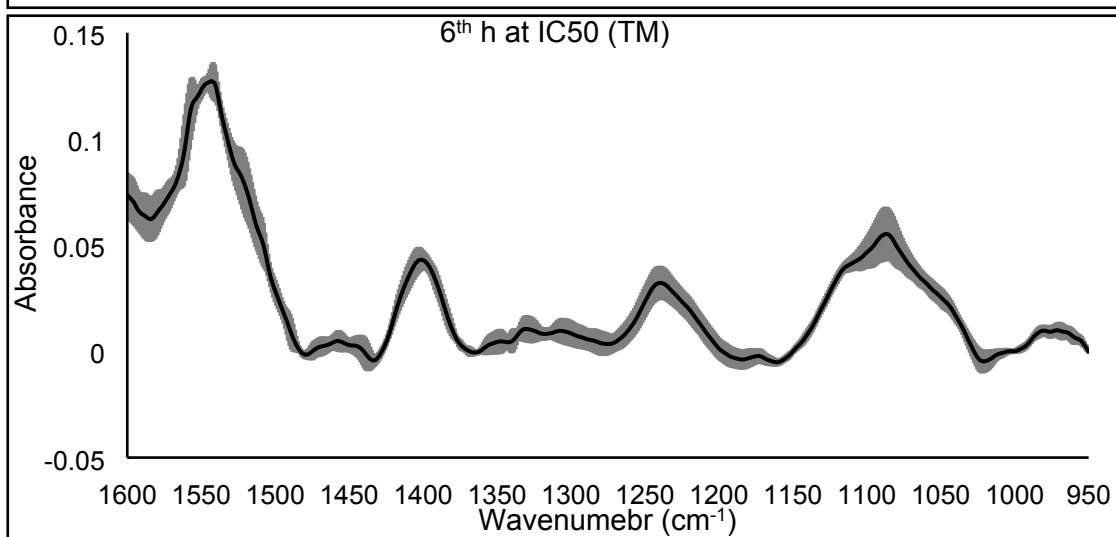
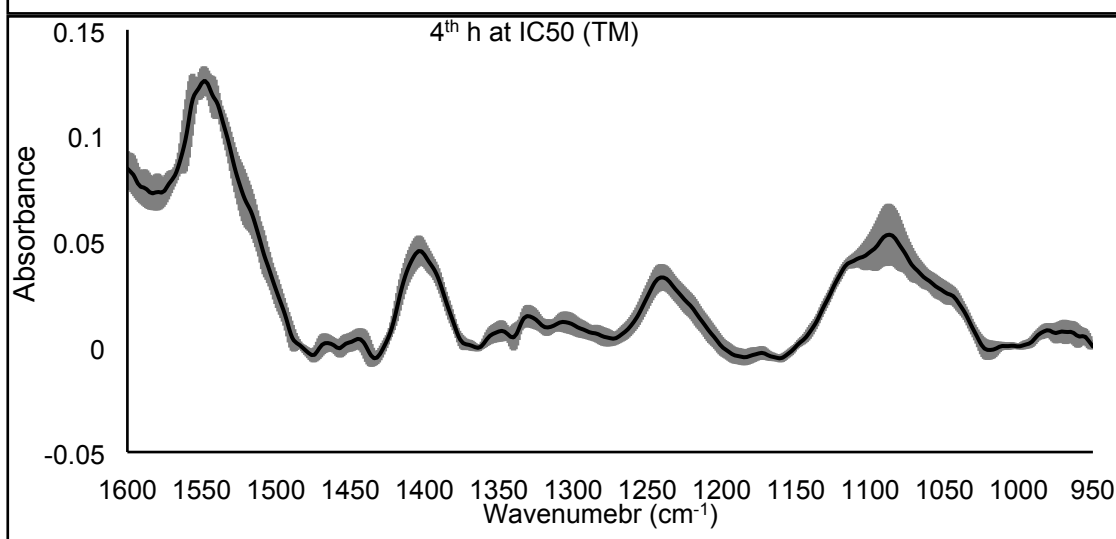
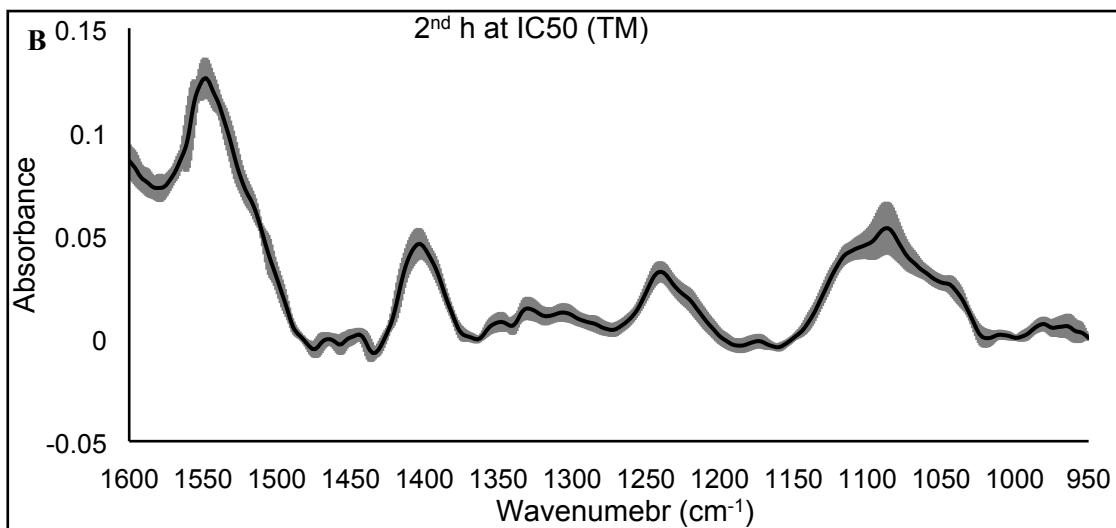
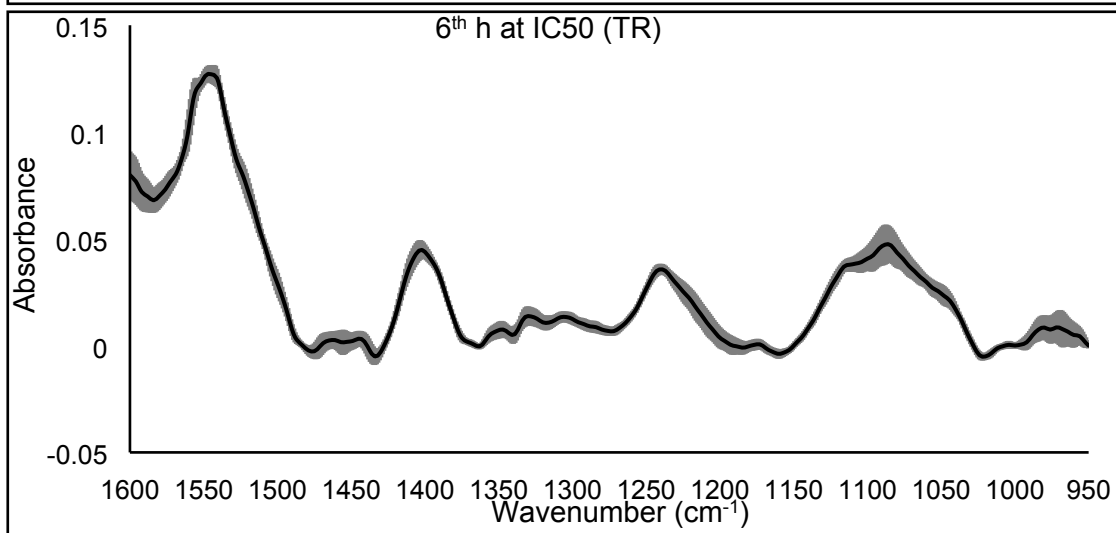
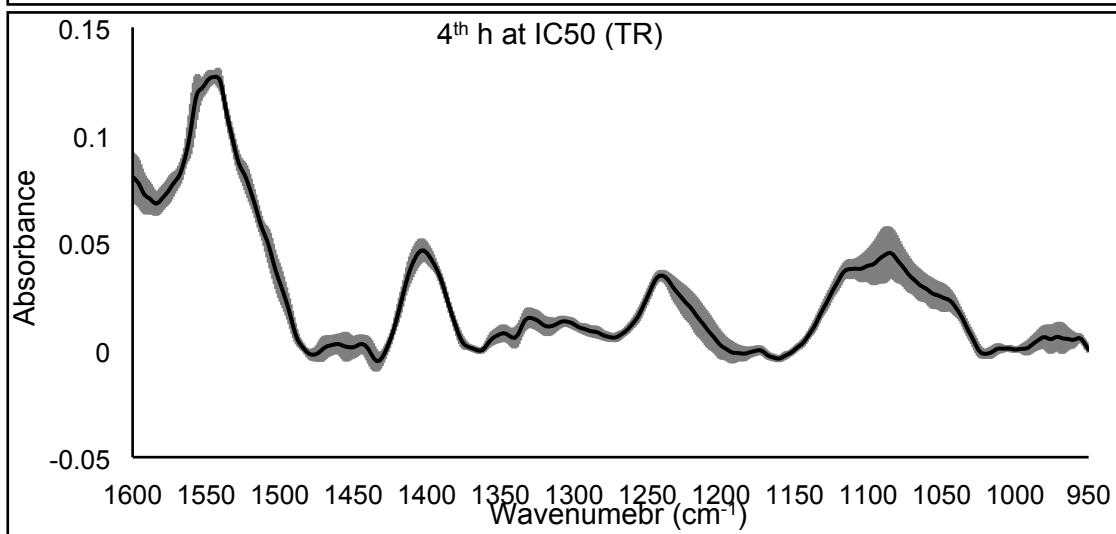
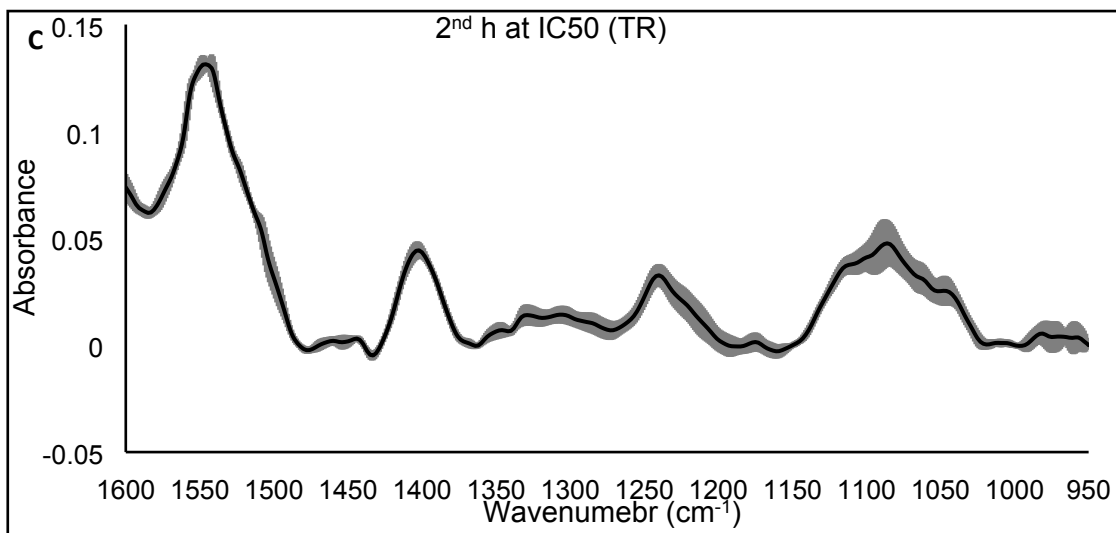


Figure S4: ATR FTIR absorbance of water in the IR fingerprint region (1800-900 cm^{-1}). The absorbance of water in amide I of cells ($\sim 1640 \text{ cm}^{-1}$) exceeds 0.8 and indicates possible interference of water band due to saturation of detectors.







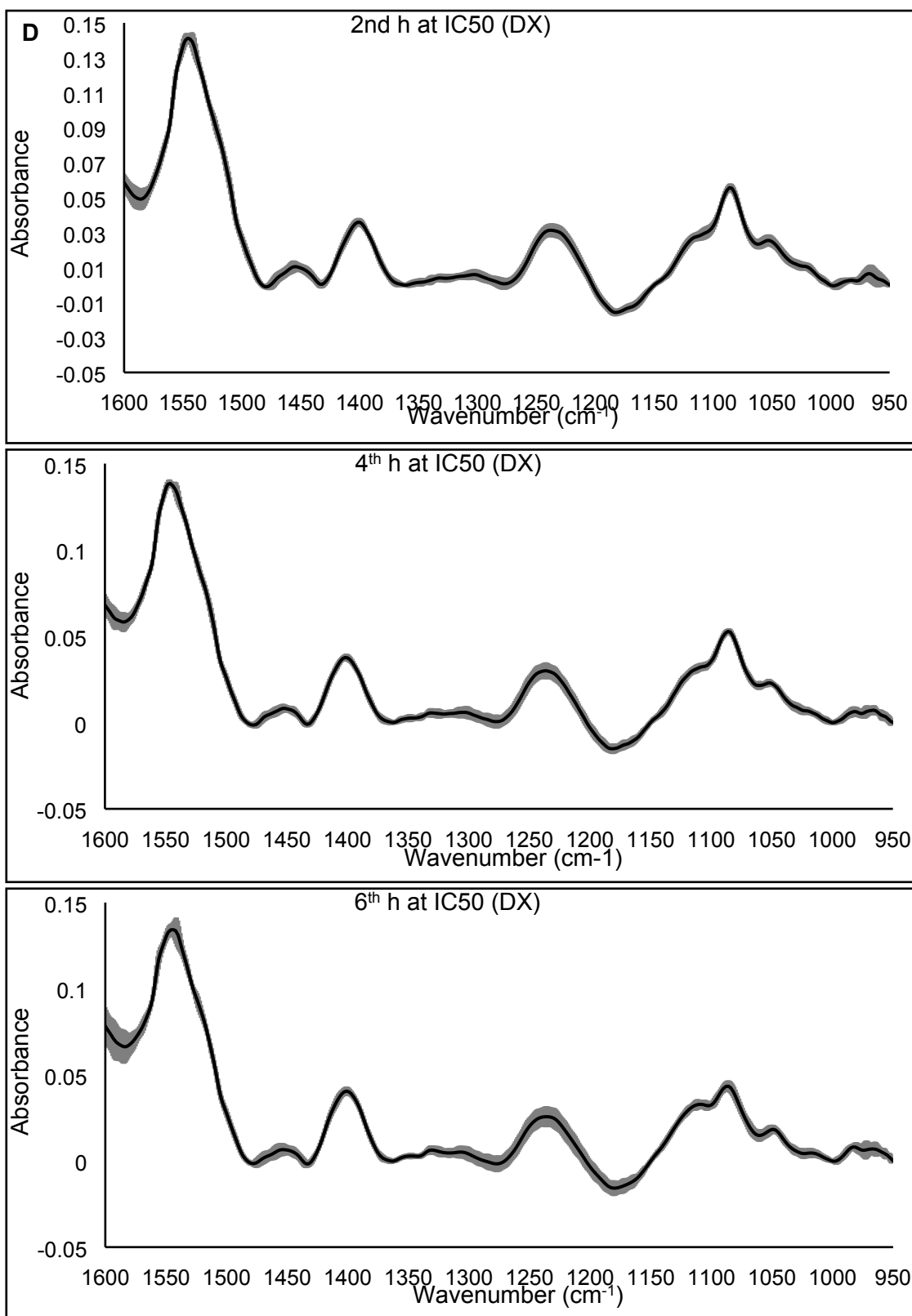


Figure S5: FTIR vector normalised difference spectra of live MCF7 cells after exposure to 0.1% DMSO (drug vehicle; control(A)) and IC₅₀ of tamoxifen (B), toremifene (C), and doxorubicin (D) for the 2nd, 4th and 6th h. The average spectra of three repeated measurements are presented in (Black line) with error bars shown in (Grey).

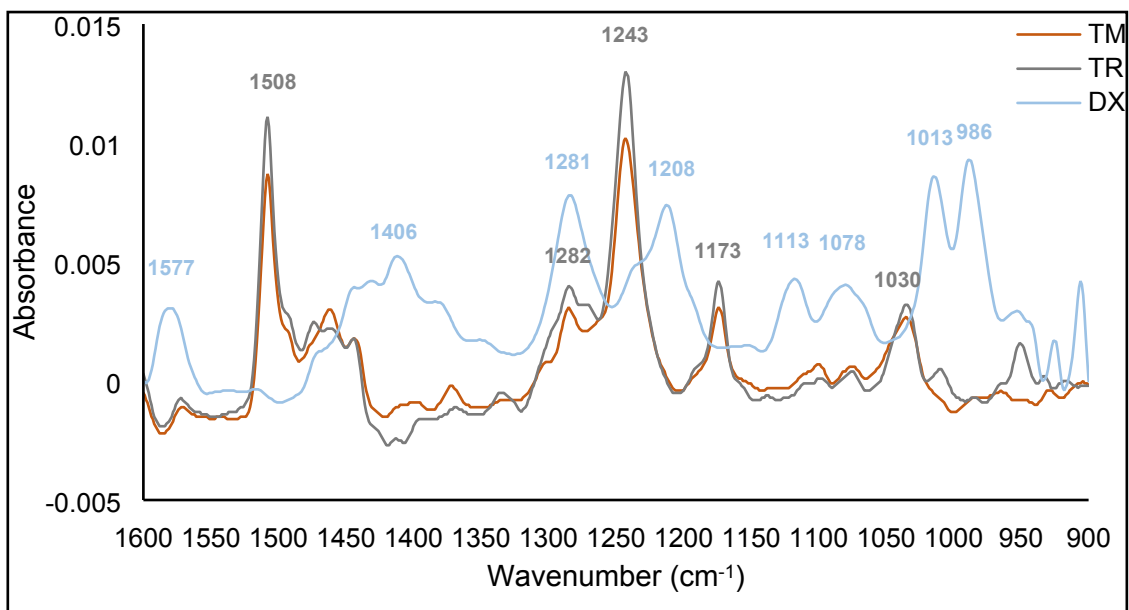
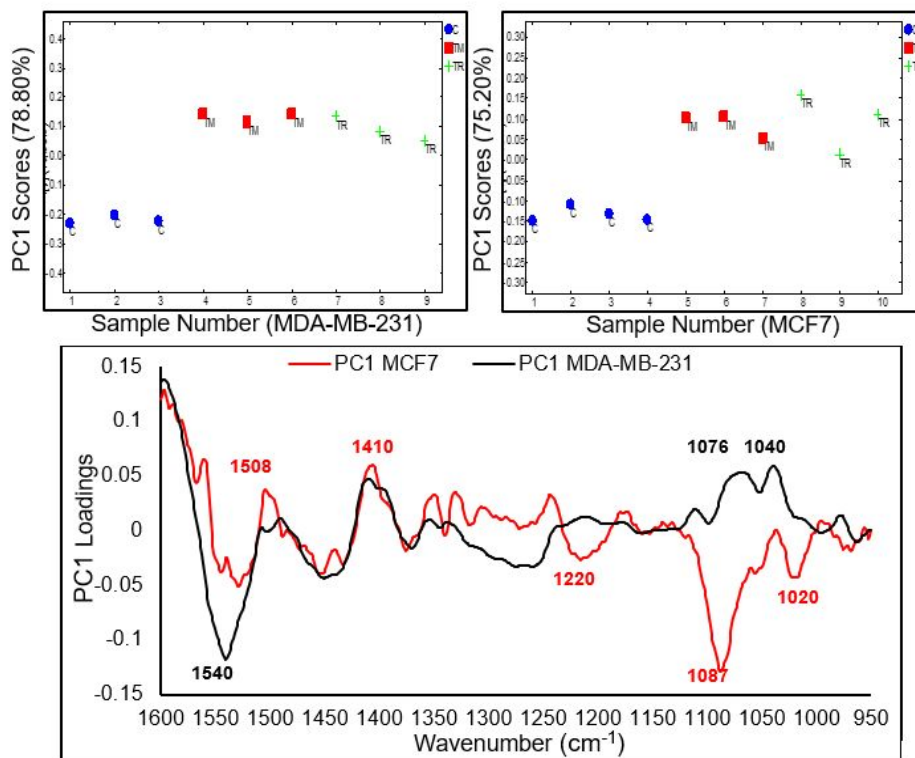


Figure S6: ATR-FTIR spectra of 10mM solution (using water as a background) of tamoxifen (TM), toremifene (TR) and doxorubicin (DX) with IR bands of functional group for each of the drug are highlighted (colour-coded).

A)



B)

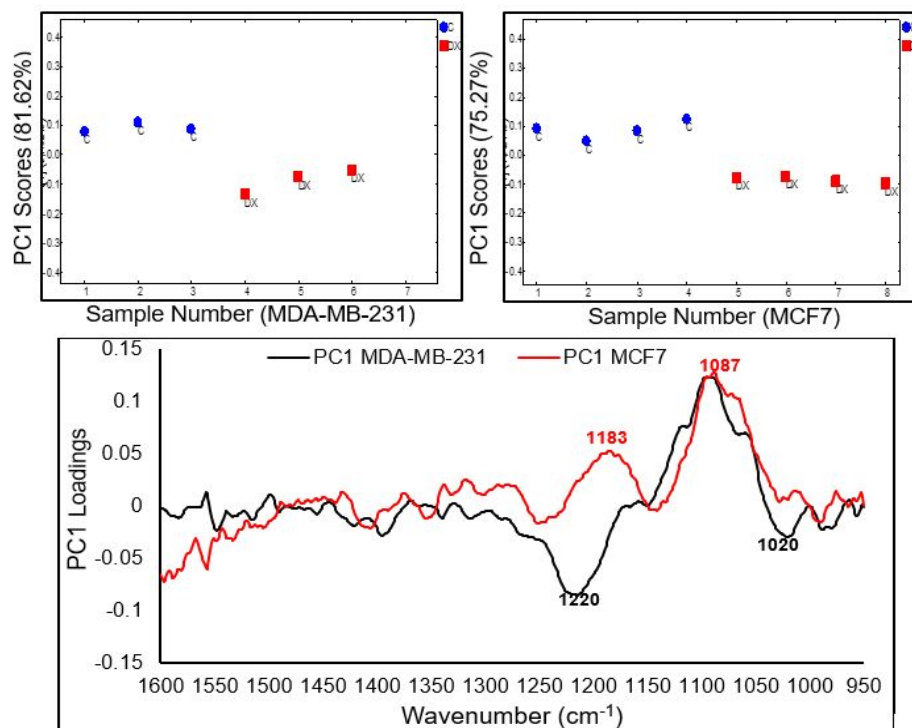
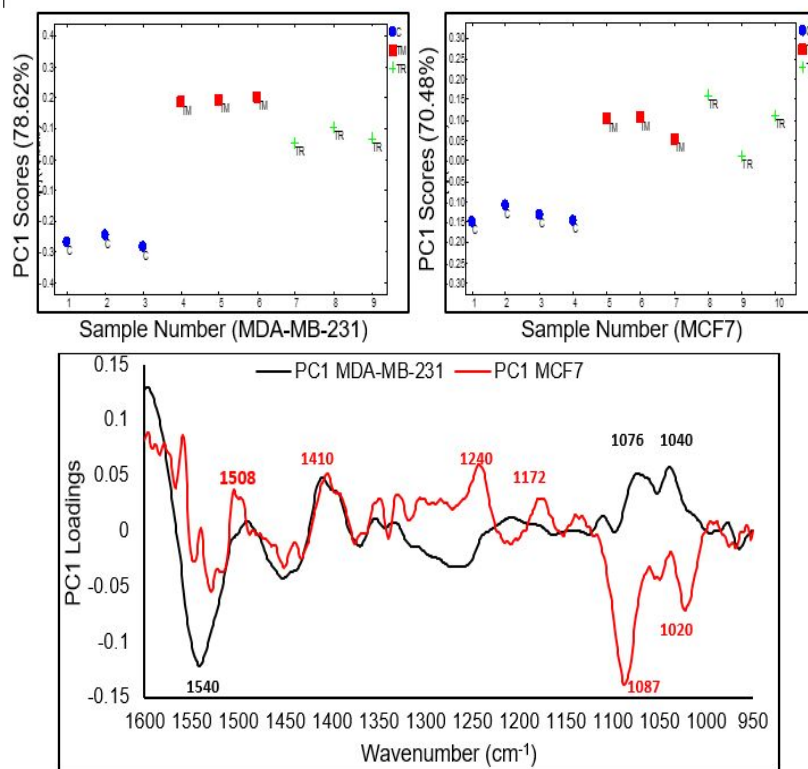


Figure S7: Pairwise PC1 scores and loadings of MCF7 and MDA-MB-231 cells for the 4th h of exposure to the IC₅₀ of tamoxifen/toremifene (A) and doxorubicin (B).

A)



B)

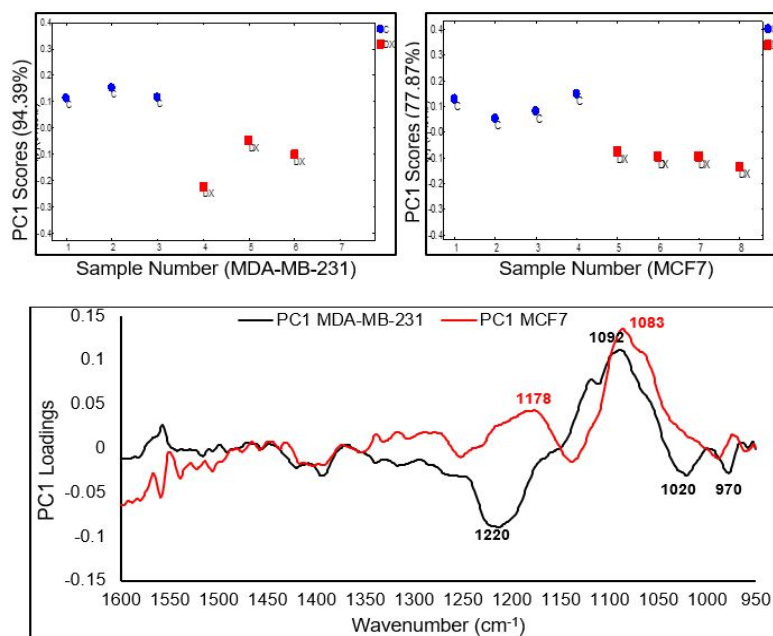


Figure S8: Pairwise PC1 scores and loadings of MCF7 and MDA-Mb-231 cells for the 6th h of exposure to the IC₅₀ of tamoxifen/toremifene (A) and doxorubicin (B).