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Photoacoustic Spectroscopy, Photoemission Spectroscopy and Photothermal Spectroscopy Comparative Study on Malignant and Benign Human Cancer Cells and Tissues with the Passage of Time Under Synchrotron Radiation

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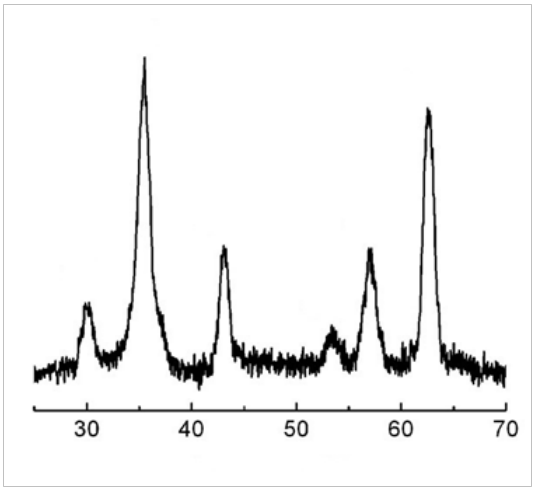
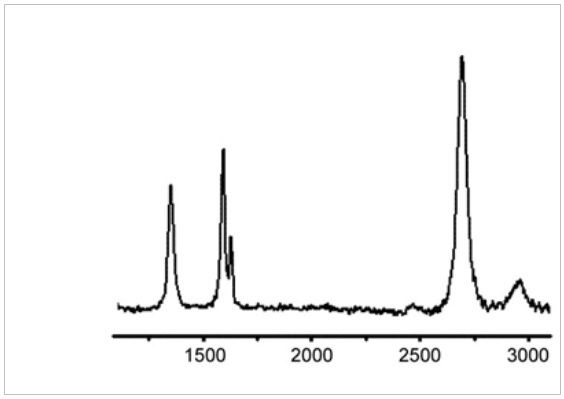
In the current study, we have experimentally and comparatively investigated and compared malignant human cancer cells and tissues before and after irradiating of synchrotron radiation using Photoacoustic Spectroscopy, Photoemission Spectroscopy and Photothermal Spectroscopy. It is clear that malignant human cancer cells and tissues have gradually transformed to benign human cancer cells and tissues under synchrotron radiation with the passage of time (Figures 1–3) [1–109].

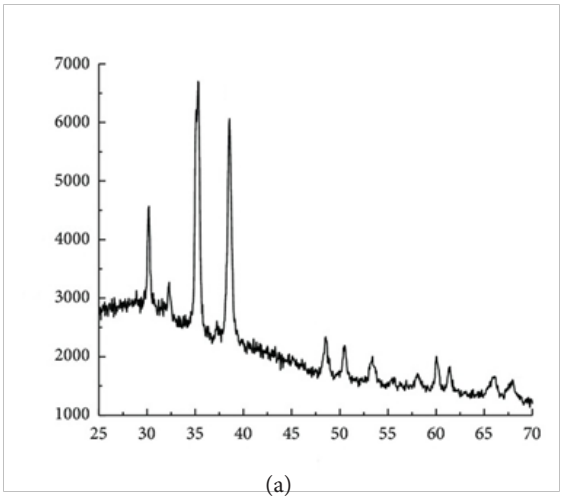


(a)



(b)

Figure (1): Photoacoustic Spectroscopy analysis of malignant cancer cells and tissues (a) before and (b) after irradiating of synchrotron radiation in transformation process to benign human cancer cells and tissues with the passage of time [1–109].



(a)

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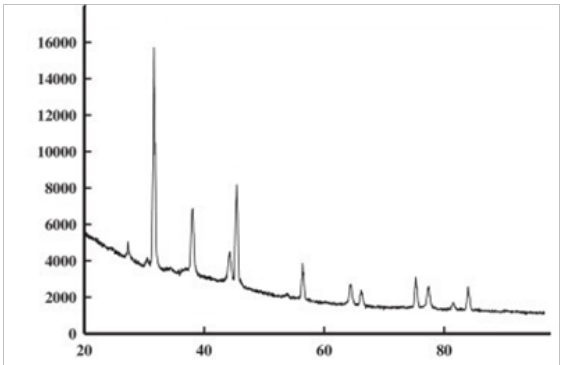
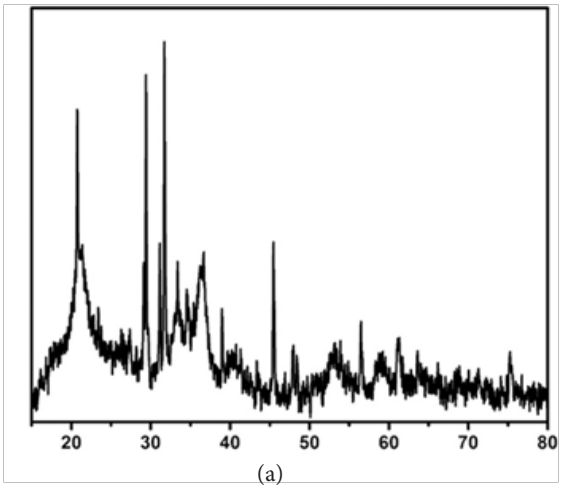
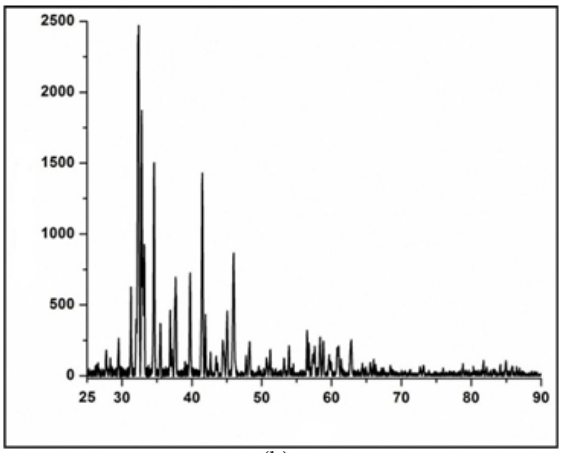


(b)

Figure (2): Photoemission Spectroscopy analysis of malignant cancer cells and tissues (a) before and (b) after irradiating of synchrotron radiation in transformation process to benign human cancer cells and tissues with the passage of time [1–109].



(a)



(b)

Figure (3): Photothermal Spectroscopy analysis of malignant cancer cells and tissues (a) before and (b) after irradiating of synchrotron radiation in transformation process to benign human cancer cells and tissues with the passage of time [1–109].

It can be concluded that malignant human cancer cells and tissues have gradually and clearly transformed to benign human cancer cells and tissues under synchrotron radiation with the passage of time (Figures 1–3) [1–109]. It should be noted that in all of the figures y–axis shows intensity and also x–axis shows energy (keV). Furthermore, there is a shift of the spectrum in all of spectra after irradiating of synchrotron radiation that it is because of the malignant human cancer cells and tissues shrink post synchrotron irradiation with the passage of time.

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