Table S_1: Crystallographic parameters of hydroxyapatite without gamma radiation

Parameter	Without gamma radiation
Crystallite size, nm	9.05
HAp percentage	88.00
Degree of crystallinity	0.11
β-TCP percentage	12.00
Microstrain, ε	0.56
Volume Fraction of β-TCP	1.66
Dislocation density, (1015 lines/m2)	4.11
Crystallinity index, CIXRD	1.52
Crystallinity index, CI112/300	0.35
Specific surface area, S	112.31
(Crsytallinity index from FTIR) CI_{height}	5.1
(Crsytallinity index from FTIR) $CI_{area-1060}$	0.85
(Crsytallinity index from FTIR) $CI_{area-603}$	3.01
(Crsytallinity index from FTIR) $CI_{FWHM-603}$	11.75
(Crsytallinity index from FTIR) $CI_{FWHM-1028}$	53.83

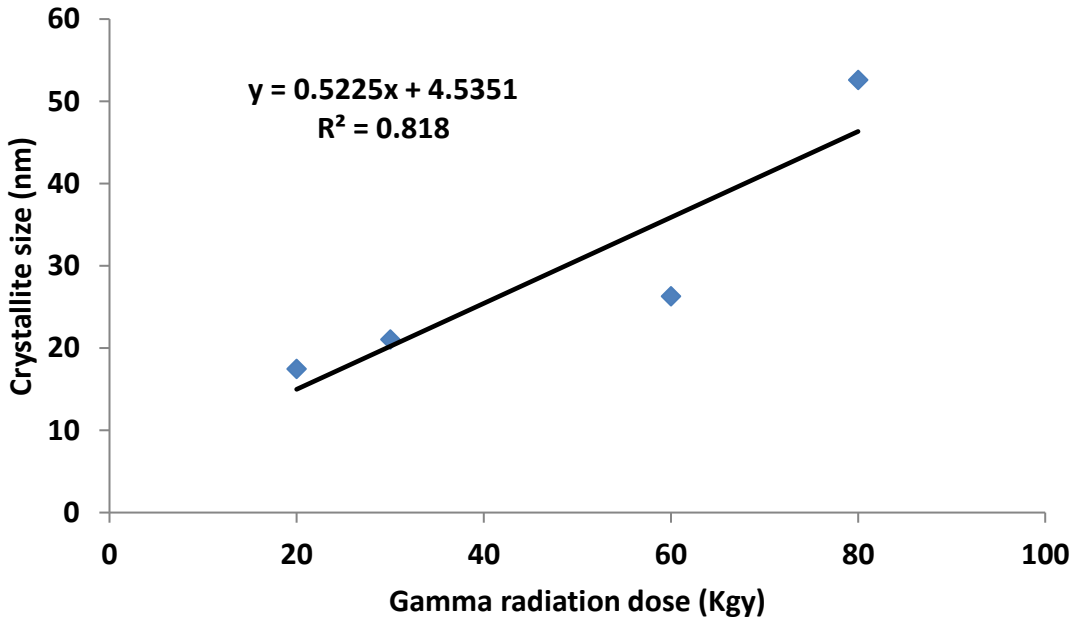

Figure S_1: Relationship between crystallite size and gamma radiation dose

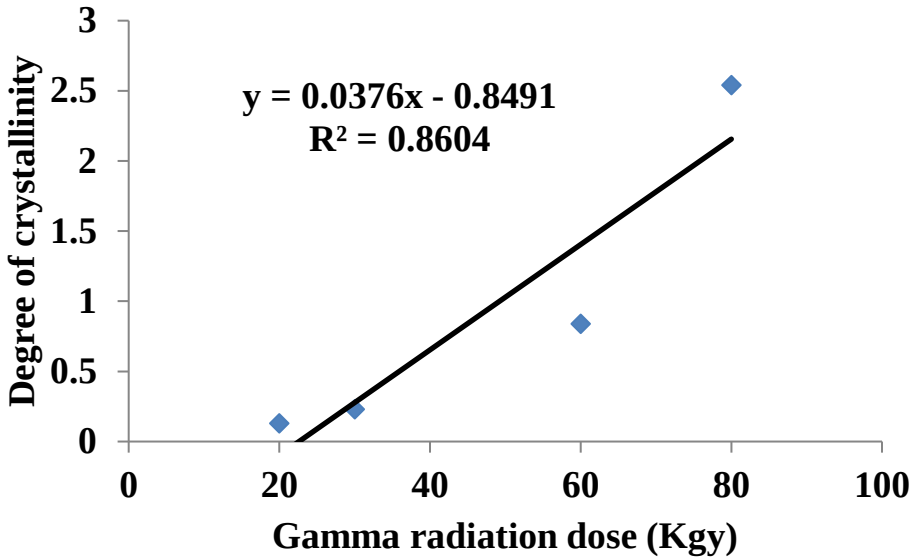

Figure S_2: Change of degree of crystallinity with gamma radiation dose

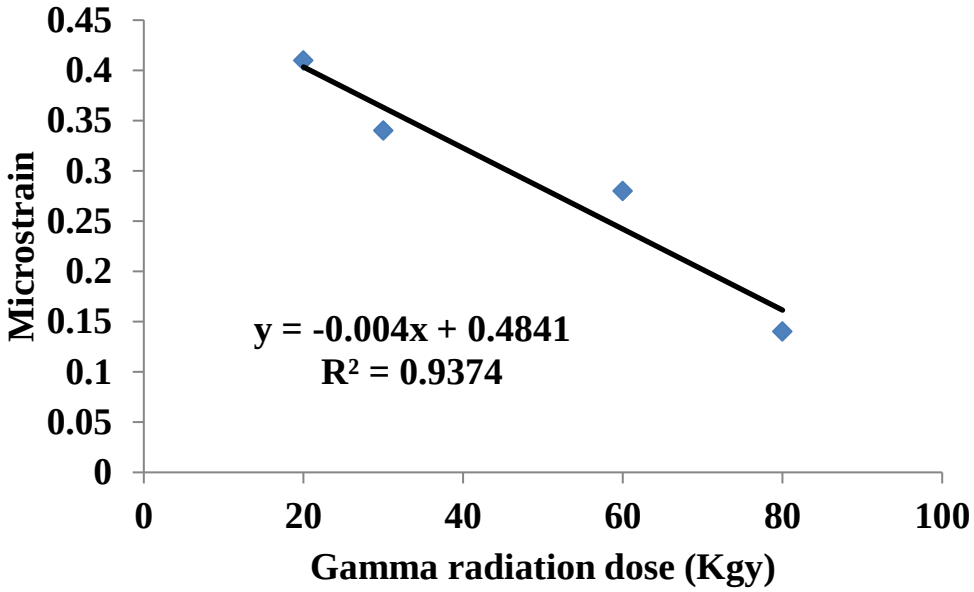

Figure S_3: Effects of gamma radiation on microstrain

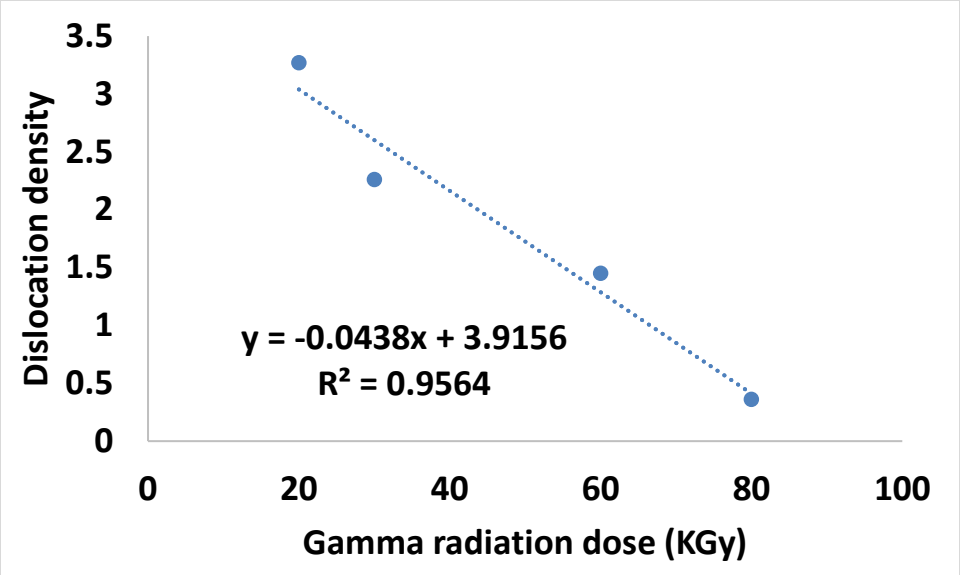

Figure S_4: Effects of gamma radiation on dislocation density

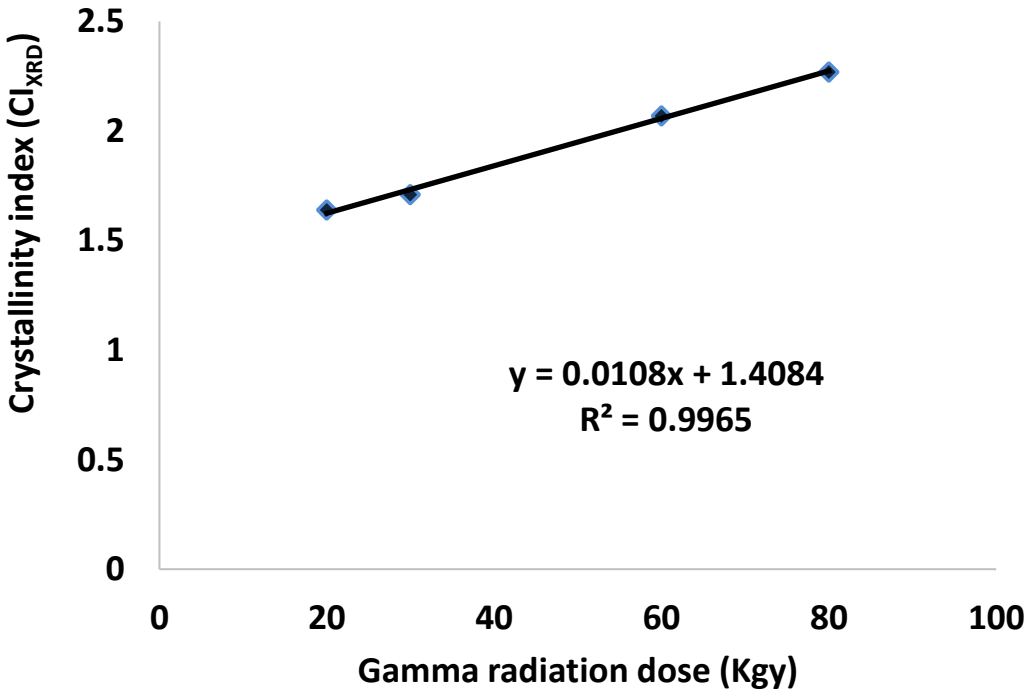

Figure S_5: Variation in crystallinity index due to application of gamma radiation

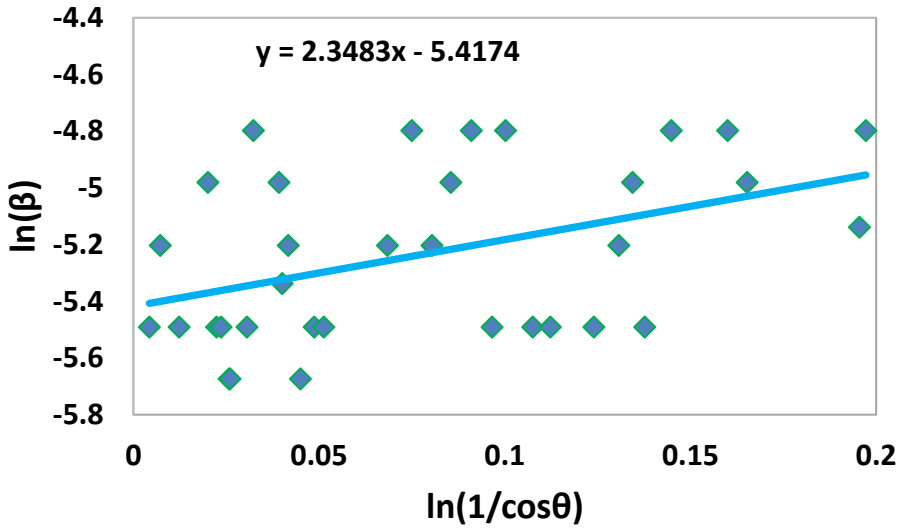

Figure S_5: Monshi Scherrer plot to calculate crystallite size for 30 KGy gamma radiation

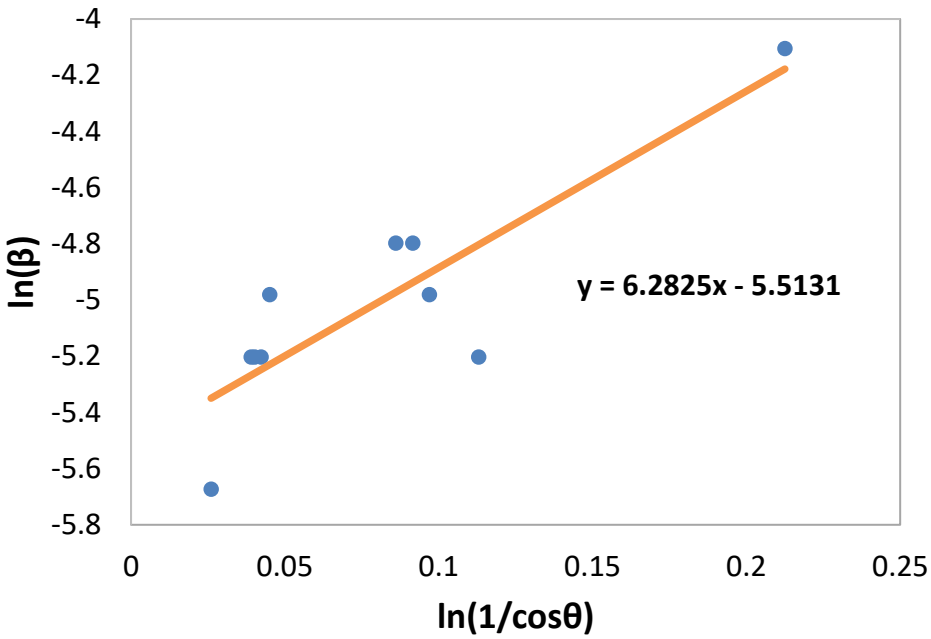

Figure S_6: Monshi Scherrer model to estimate crystallite size for 60 KGy gamma radiation

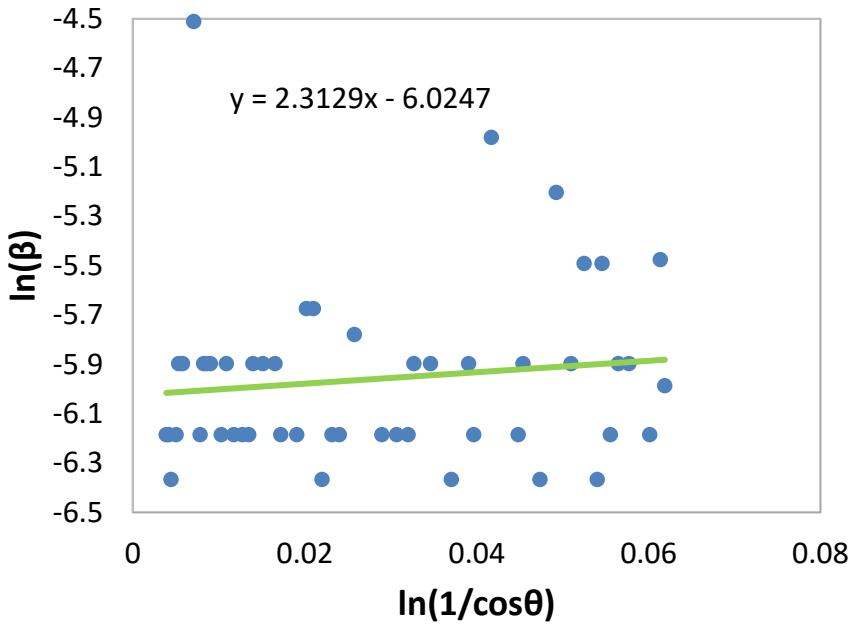

Figure S_7: Crystallite size calculation using Monshi Scherrer model for 60 KGy gamma radiation

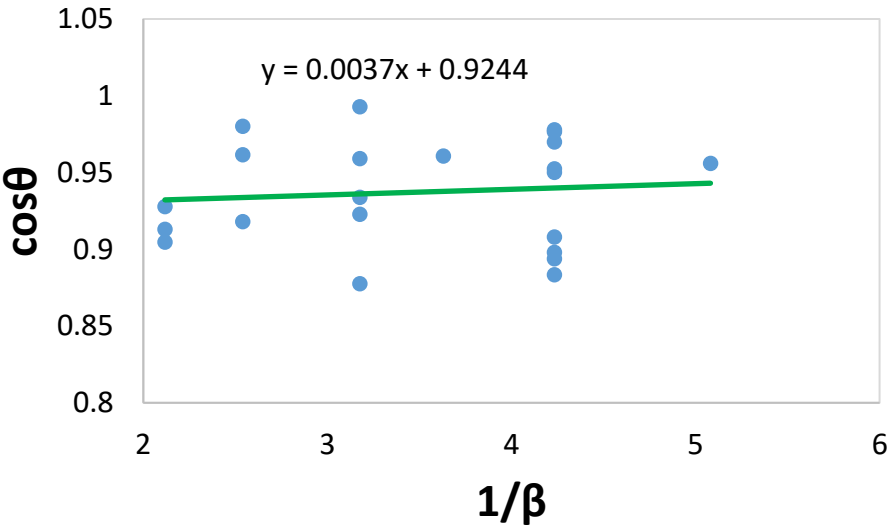

Figure S_8: Crystallite size calculation using straight line method of Scherrer equation 30 KGy gamma radiation

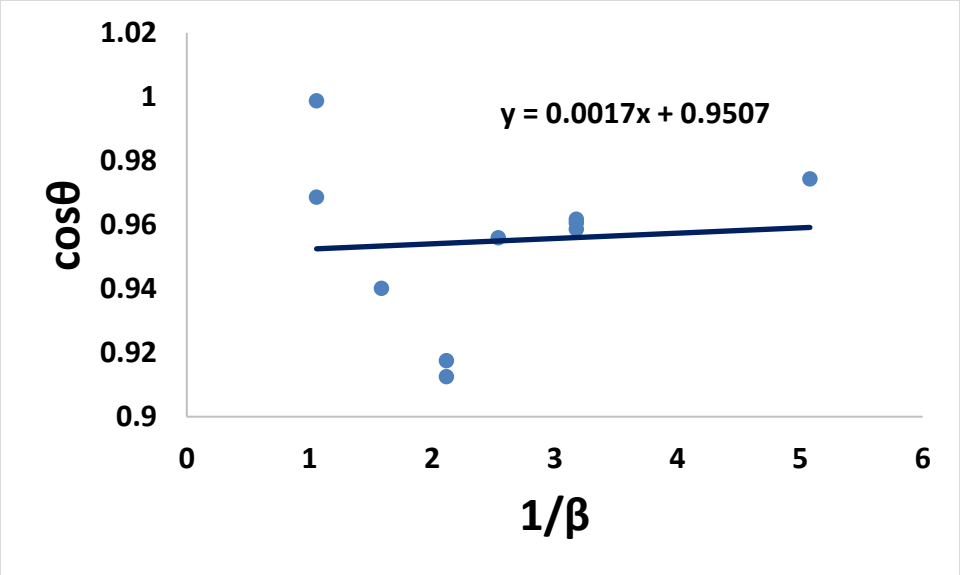

Figure S_9: Crystallite size calculation using straight line method of Scherrer equation 60 KGy gamma radiation

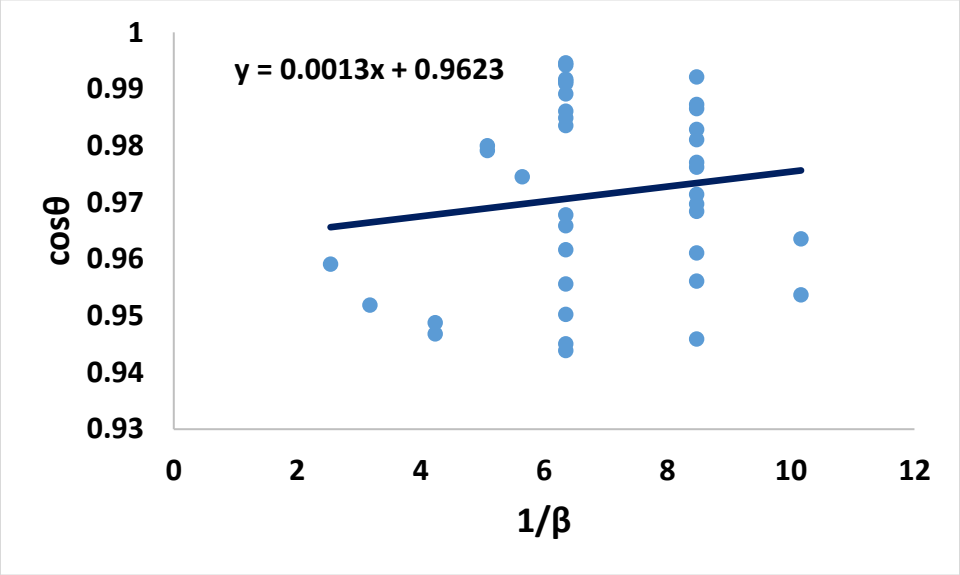

Figure S_10: Crystallite size calculation using straight line method of Scherrer equation 80 KGy gamma radiation

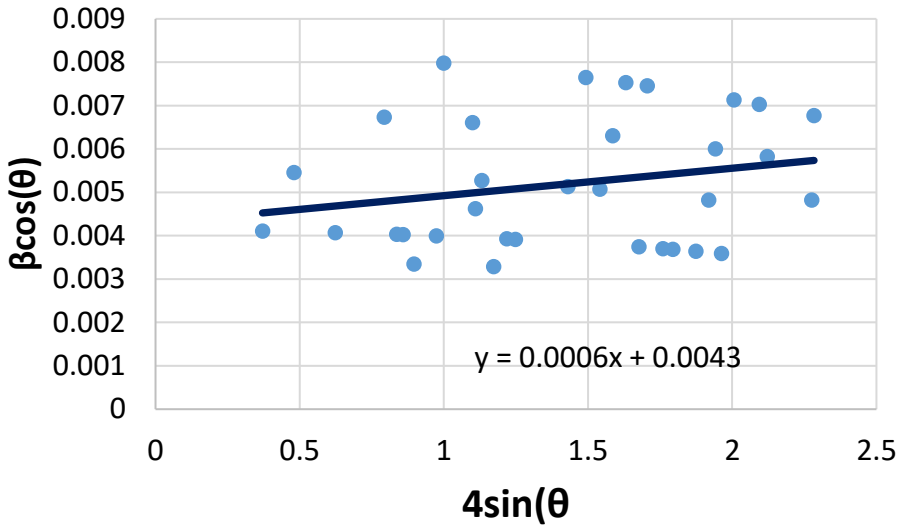

Figure S_11: Estimation of crystallite size using Williumson-Hall plot for 30 KGy gamma radiation dose

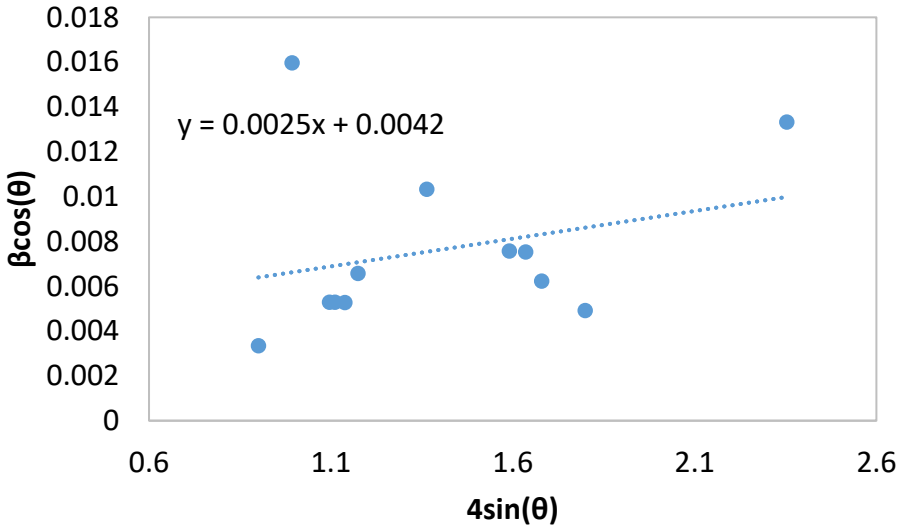

Figure S_12: Williumson-Hall plot for 60 KGy gamma irradiated HAp

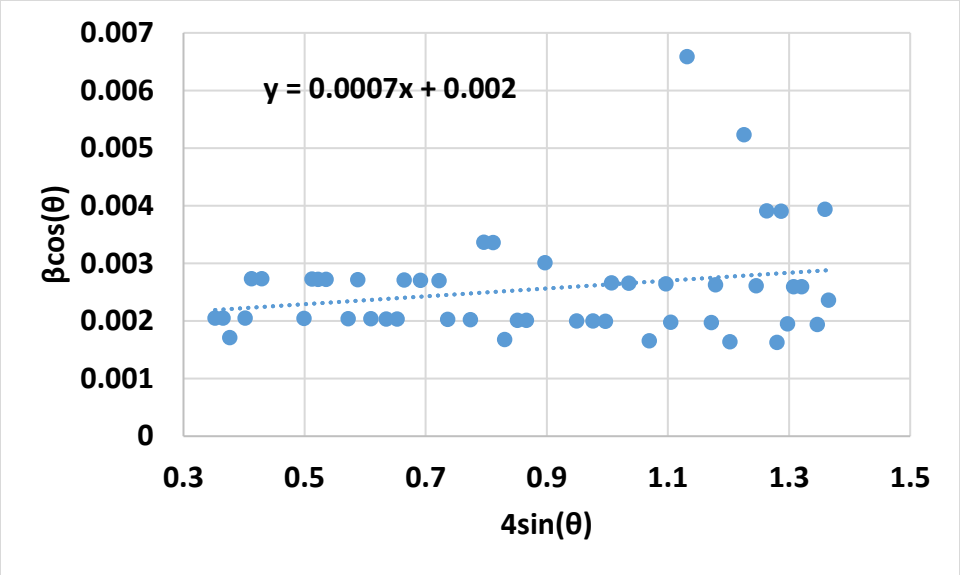

Figure S_13: Calculation of crystallite size employing Williumson-Hall model

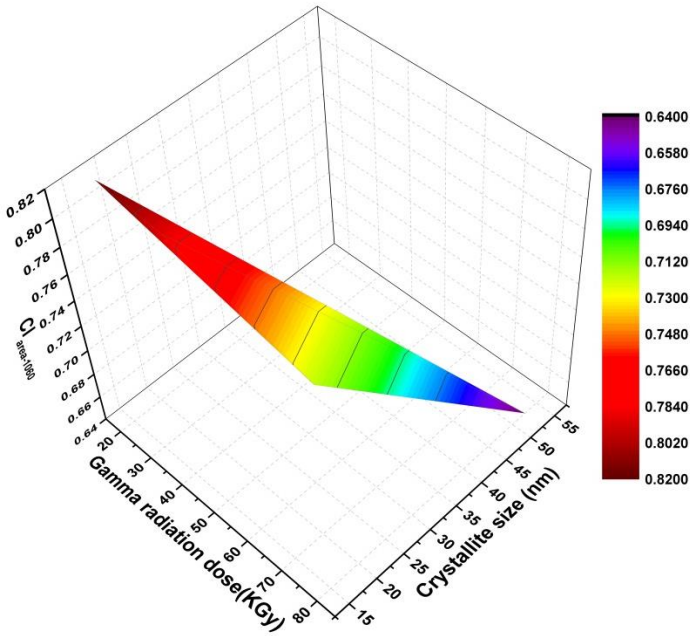

Figure S_14: Dependency among crystallinity index ($CI_{area\text{-}10608}$), gamma radiation dose, and crystallite size

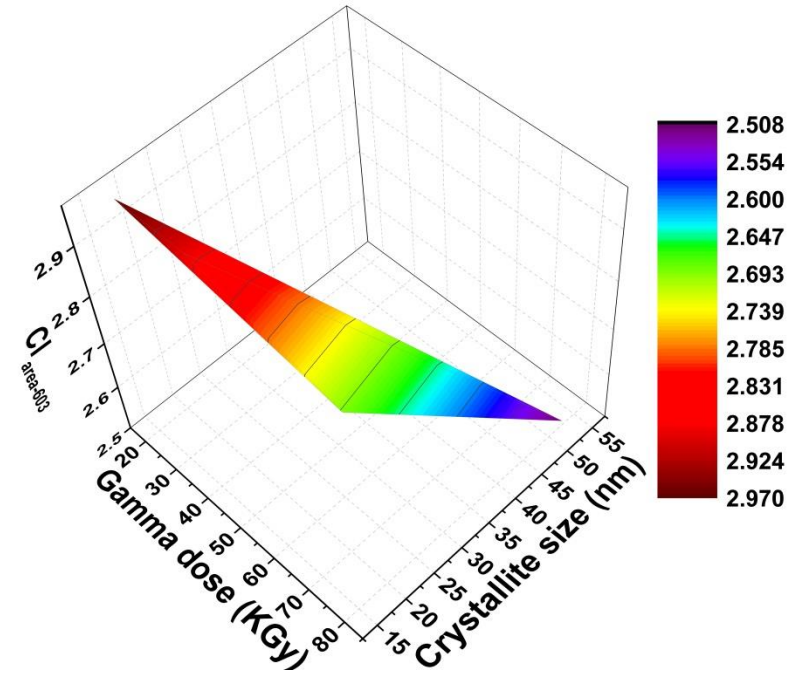

Figure S_15: Relationship of crystallinity index ($CI_{area\text{-}10608}$) with gamma radiation dose, and crystallite size

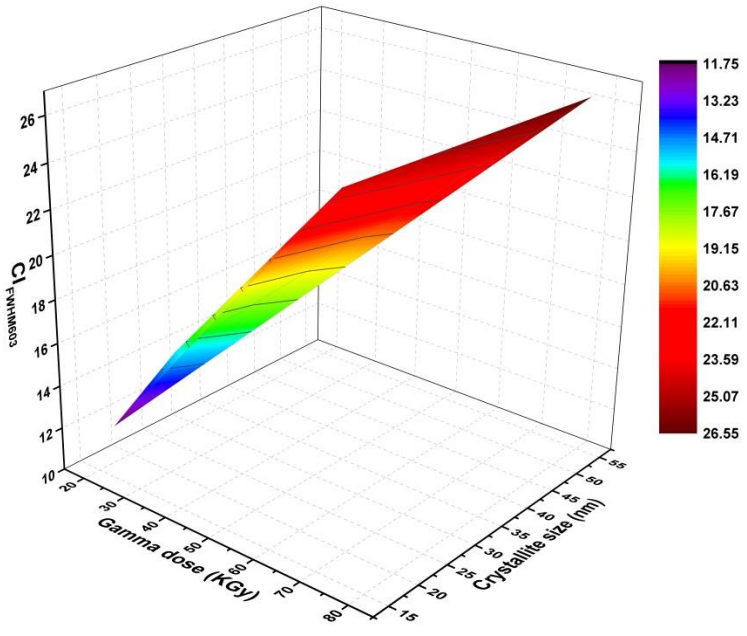

Figure S_16: Variation of crystallinity index ($CI_{FWHM\text{-}603}$) with gamma radiation dose, and crystallite size

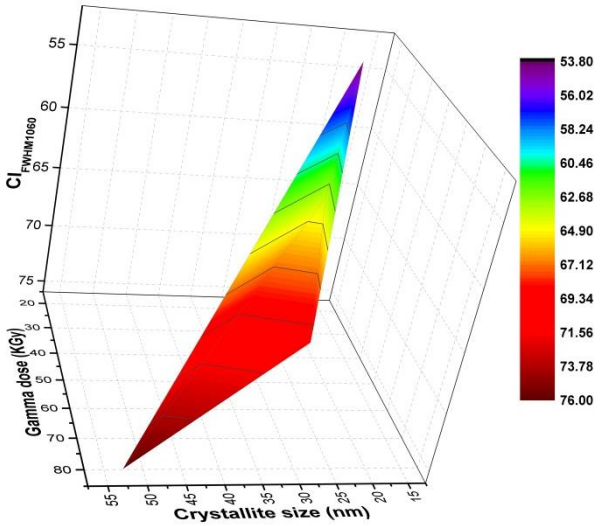

Figure S_17: Reliance of crystallinity index ($CI_{FWHM-1028}$) with gamma radiation dose, and crystallite size