

## **O62. MECHANICAL PROPERTIES AND THERMAL BEHAVIOR EVALUATION OF EXPERIMENTAL DENTAL COMPOSITES FILLED WITH IRRADIATED MONTMORILLONITE**

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The effects of pre-irradiation treatment (dose ranged from 25 - 50 kGy) of MMT nanoclay added as filler (50 wt%) in experimental dental composites based on Bis-GMA / TEGDMA, was studied. The thermal stability of resulting material was tested by thermogravimetry analysis (TGA) ranging from 50 to 800 °C. Elastic modulus and flexural strength was determined by the three point bending test (n=10). Data for elastic modulus were analyzed using two way ANOVA/ Tukey's test. Data for flexural strength were analyzed using Kruskal-Wallis/ Tukey's test. For all tests, the global significance level was 5%. The modifications in elastic modulus and flexural strength with applied dose were characterized. XDR and TEM analysis allows depicting the intercalation phenomenon between base-polymer and nanophase. The polymeric system modified with MMT nanoparticles showed higher thermal stability by delaying in the thermal degradation, compared to the control group and the radiation dose influenced directly this thermal behavior. However, the applied dose was not sufficient to improve significantly the mechanical properties, which is related to the interaction between MMT and polymeric matrix. The pre-irradiation treatment of MMT nanoclay phase was useful for the attaining efficient interaction between the two constitutive phases of the systems bis-GMA/TEGDMA modified with MMT nanoparticles, because the polymer component was not affected.