2016

Alternative Materials for Dental Restorations

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MECHANICAL AND NUCLEAR

Alternative Materials
for Dental Restorations

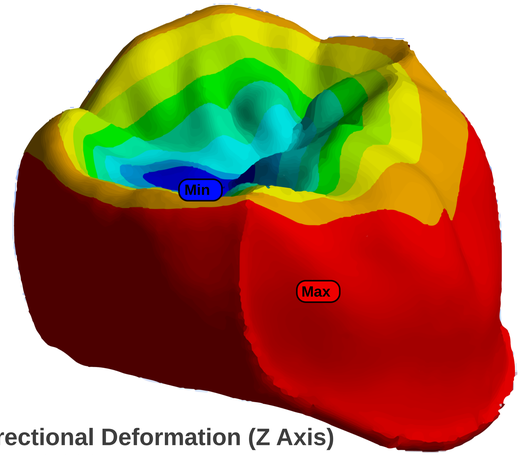
CAPSTONE DESIGN EXPO 2016

The Printer and Material

Figure 1: M3D Micro 3D Printer, Cost: $349.99

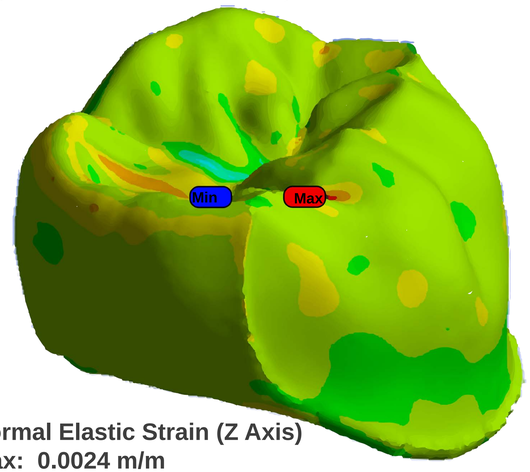
Figure 2: PLA Filament, Cost: $14/Spool

Structural Analysis



Directional Deformation (Z Axis)
Max: 0.0064 m
Min: -0.0679 m

Figure 3: Deformation Analysis of a Molar Crown



Normal Elastic Strain (Z Axis)
Max: 0.0024 m/m
Min: -0.0038 m/m

Figure 4: Strain Analysis of a Molar Crown

Economic Analysis

MCV's Costly Initial Investment

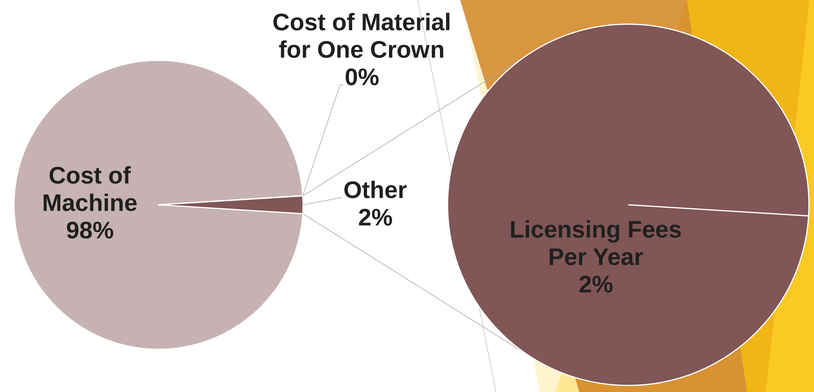


Figure 5: Total Cost for First Milling: $102030

A Comparison of Various Economic Figures

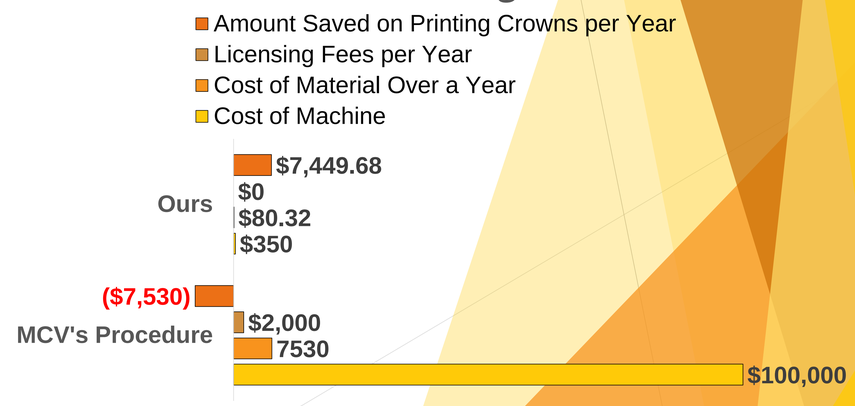


Figure 6: 3D Printing is 98.93% Cheaper