Table S1.

1.1: Correlation Matrix

|  | Hs | Ss | W | Ed | Modulus E |
|---|---|---|---|---|---|
| Hs | **1** | -0,257 | 0,164 | -0,086 | -0,438 |
| Ss | -0,257 | **1** | -0,187 | -0,677 | -0,311 |
| W | 0,164 | -0,187 | **1** | 0,747 | 0,700 |
| Ed | -0,086 | -0,677 | 0,747 | **1** | 0,802 |
| Modulus E | -0,438 | -0,311 | 0,700 | 0,802 | **1** |

1.2: Regression of Variable "E": Regression Coefficients "E"

| | |
|---|---|
| Observations | 19 |
| Somme des poids | 19 |
| DDL | 14 |
| R² | 0,977 |
| R² ajusté | 0,970 |
| MCE | 3,886 |
| RMCE | 1,971 |
| MAPE | 2,671 |
| DW | 1,673 |
| Cp | 5,000 |
| AIC | 29,990 |
| SBC | 34,712 |
| PC | 0,039 |

| Variable | Observations | Obs. avec données manquantes | Obs. sans données manquantes | Minimum | Maximum | Moyenne | Ecart-type |
|---|---|---|---|---|---|---|---|
| E | 19 | 0 | 19 | 28,234 | 75,845 | 62,225 | 11,461 |
| Hs | 19 | 0 | 19 | 0,200 | 0,250 | 0,237 | 0,023 |
| Ss | 19 | 0 | 19 | 2000,000 | 3000,000 | 2631,579 | 402,841 |
| W | 19 | 0 | 19 | 12,000 | 25,000 | 19,368 | 3,624 |
| Energie | 19 | 0 | 19 | 0,160 | 0,500 | 0,321 | 0,082 |

Predicted (modulus"E") / Modulus"E"

1.3: Normalized residues / Modulus E
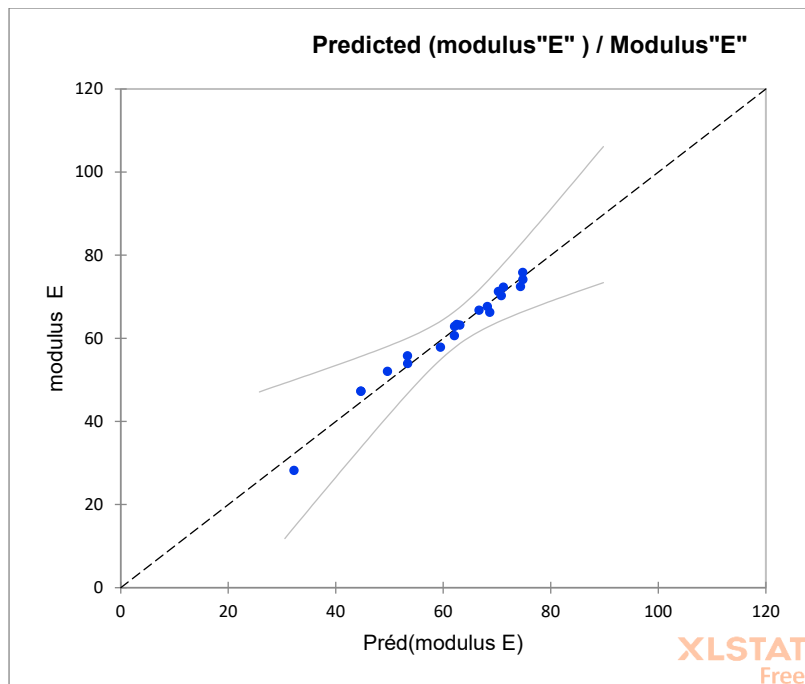


Normalized residues / Modulus E
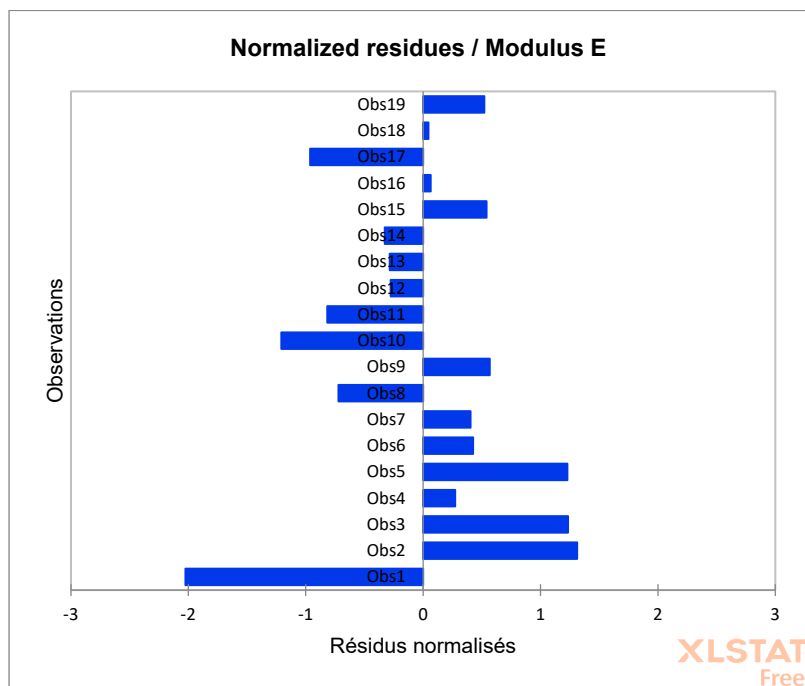
**E(Mpa) = 292,006792120481-663,39543304767\*Hs(mm)-4,29180303911739E-02\*Ss(mm/s)+6,31100628369743\*LP(W)-255,686834505214\*Ed(j/mm3)**

Figure S1: Reproducibility: 3D comparisons, of scanning prints obtained from replicas using the same presets, particularly focusing on the aortic leaflets. The average distance was 0.04mm +/-0.3mm (see figure).
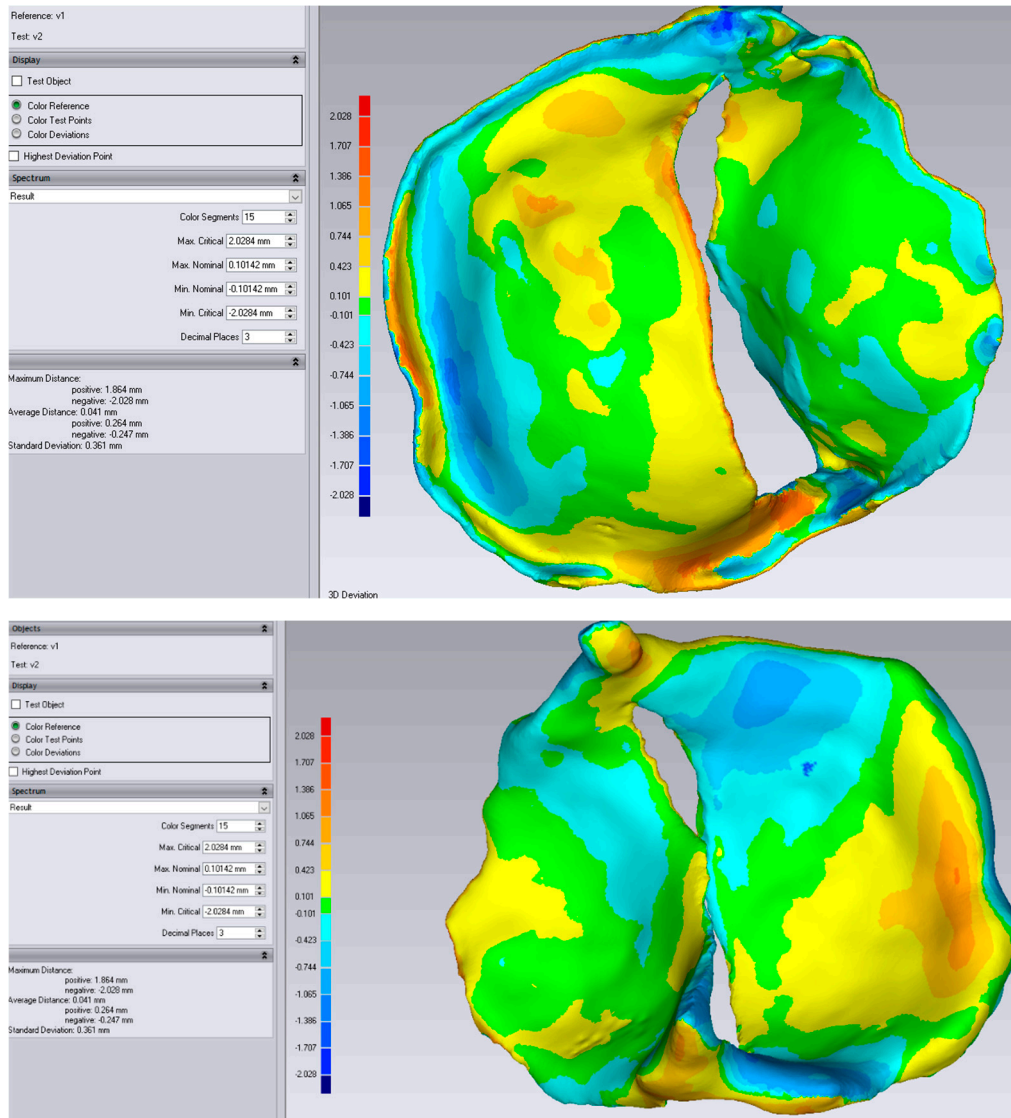
Figure S2: Shape memory:  comparison study of the models after stretching. Scan of the surface of the piece immediately after 50 cycles of full deformation and compared it to the initial STL file of the model. The average variation was 0.036 ± 0.4mm relative to the base STL model.
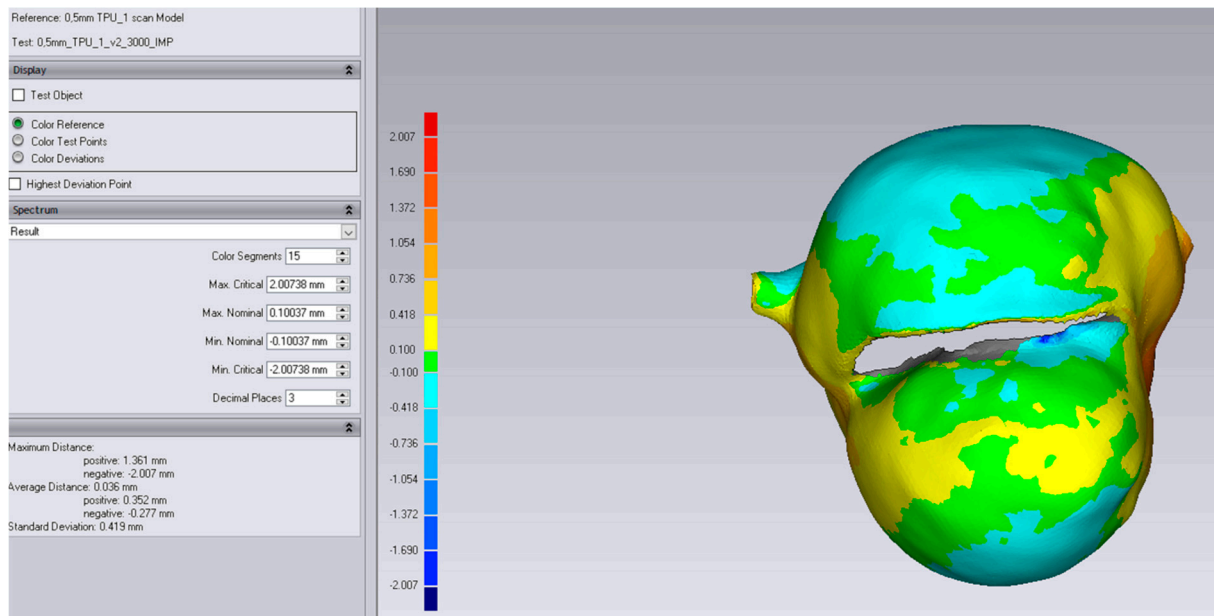


Figure S3: Comparison between the stl file obtained from the cardiac computer tomography and the 3d printed model.
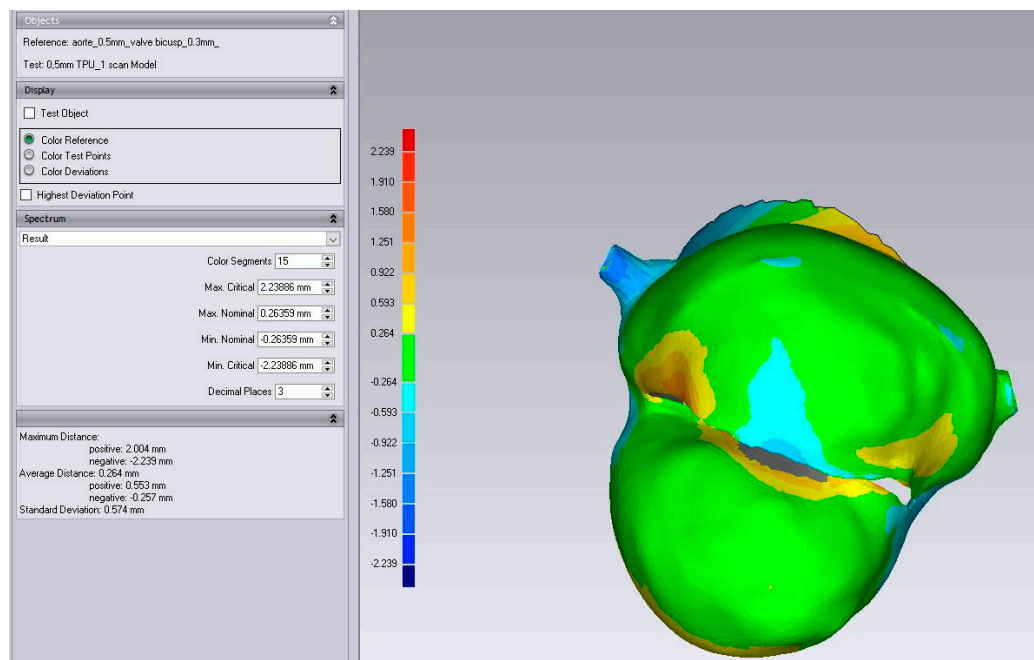
Figure S4: Ultrasound 3D Rendering: Achieving High Fidelity in Samples as Thin as 0.3mm, Resembling Original STL Models
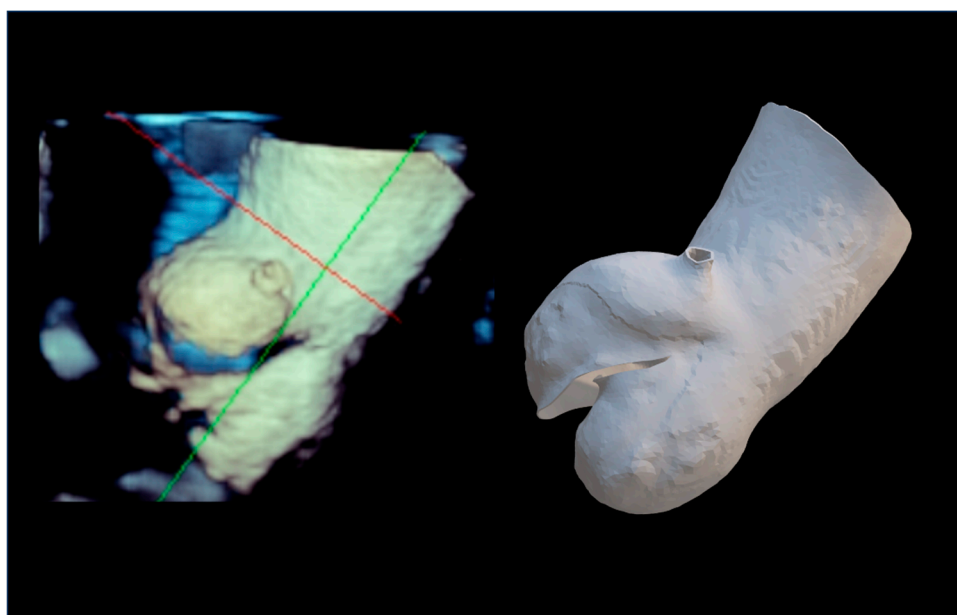


Figure S5: Aortic Leaflet Thickness Measurement: Ultrasound Evaluation of 0.06cm with Equivalent Thickness of 0.05cm in a 3D Printed Model
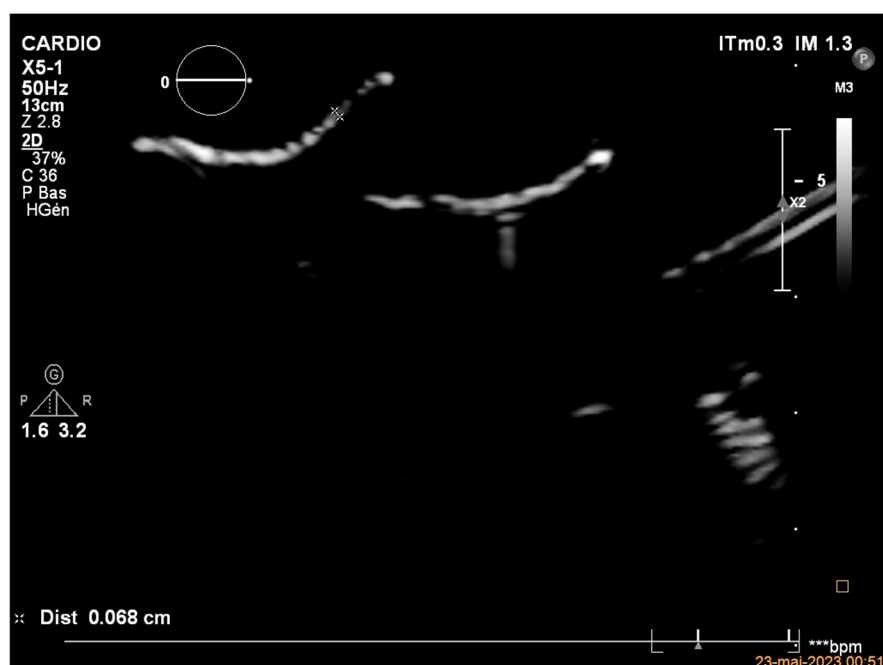
Figure S6: Ultrasound 3D Rendering of Aortic Valve: A Comparison with STL Model