

“We want to excel in delivering life-changing cosmetic dentistry to dentists from all over the country,” says Jonathan Brooks, MDT, Technical Director of Smile-Vision Laboratory Service in Newton, Massachusetts (www.smile-vision.net). Essential to helping him meet that goal: 3D Systems and Sirona’s integrated production solution which includes the Sirona inLab® scanner and infiniDent—the company’s centralized production center—and 3D Systems’ ProJet DP 3000 Modeler (formerly the InVision® DP) that prints waxups to be cast or pressed.

Using the integrated solution, the laboratory has digitized part of its restorative waxing process, increased the accuracy of its waxups and created a verifiable system of production. “This new technology takes our lab to the next level,” says Brooks.

Here, Brooks details the fabrication process for anterior pressed-to-zirconia restorations, from imaging to final prosthesis. The unique aspect of this case is Smile-Vision’s smile imaging process that guides the rest of the case. The dentist-client uploads full face or close-up photos of the patient to the laboratory’s secure website with a digital prescription and an explanation of how he wants the teeth changed. Smile-Vision’s artists use Photoshop® to adjust the teeth accordingly and return the revised photos to the dentist who shares them with the patient. Upon approval by the dentist and patient, the photos are used to plan the case and provide the esthetic basis for a diagnostic waxup and final restorations.

The dentist preps the teeth and fabricates provisional restorations based on the waxups in order to verify patient acceptance during the provisional phase. The model of the waxup or approved provisional restorations is then copied in the final restorations using CEREC inLab (www.inlab.com), InfiDent (www.infinident.com) and the 3D Systems’ ProJet DP 3000 Modeler (www.3dsystems.com).



JONATHAN BROOKS, MDT, has been the director of Smile-Vision Laboratory Service in Newton, Massachusetts since 1996. He has completed the Masters Program in Dental Technology at the NYU College of Dentistry and regularly attends postgraduate courses in dental technology and relevant dental topics.

Brooks is committed to excellence in every aspect of his work; his core values are innovation, consistency, honesty, clear communication and partnership.

How to Fabricate Anterior Pressed-to-Zirconia Restorations

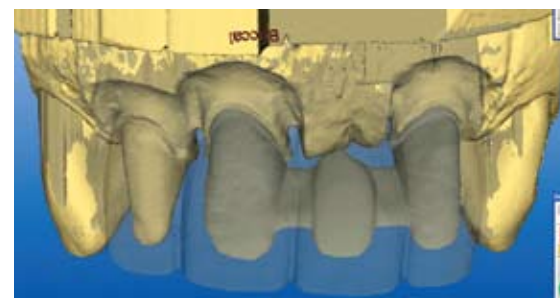
Step 1 The dentist sends an alginate impression to Smile-Vision Laboratory Service in Newton, Massachusetts, and Jonathan Brooks, MDT, Technical Director, creates an upper and lower diagnostic waxup based on accepted Smile-Vision computer simulation.



Step 2 Once the dentist and patient approve the diagnostic waxup, Brooks fabricates a model of the upper and lower prepared teeth and a prep guide that’s used to verify the teeth have been sufficiently prepared and there is enough room for porcelain.



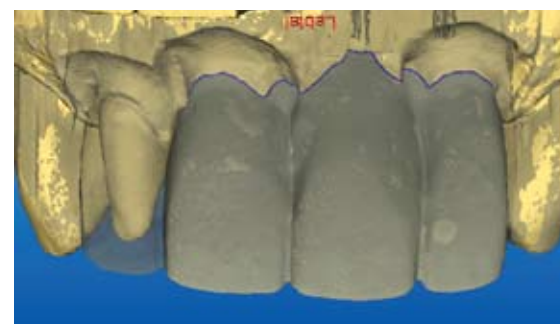
Step 3 Using the inLab scanner, Brooks scans the model of the preparations and the model of the diagnostic waxup and designs the zirconia substructures to meet the parameters of the desired results. He mills the VITA® YZ substructures with his inLab MC XL milling unit.



Step 4 He seats the zirconia substructures on the model and places the prep guide over them. The substructures fit precisely within the desired profile of the guide.



Step 5 The inLab software shows the pressable waxup design that matches the diagnostic waxup.



Step 6 Brooks sends the design data to inVeniDent, which uses 3D Systems' Projet DP 3000 Modeler (formerly the InVision® DP) to print the inCoris wax patterns that fit precisely over the zirconia substructures. Once Brooks receives the wax patterns, he fills the margins of the bridge and single units with wax and sprues them for pressing; the units are now ready to be invested.



Step 7 The bridge, single units and complete restoration after pressing in VITA PM9 porcelain.



Step 8 Brooks cuts back the incisal edges of the pressed material.



Step 9 He layers the incisal with VITA VM9 incisal porcelains.



Step 10 The pressed restorations with unfired incisal porcelain.



Step 11 After firing the incisal porcelain, he stains the case.



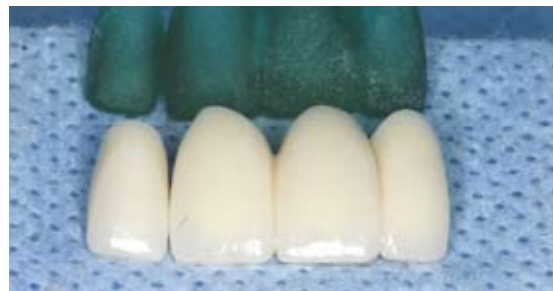
Step 12 The final glaze.



Step 13 The final restorations on the models.



Step 14 *Top:* Full-contour waxups printed with 3D Systems' Projet DP 3000 Modeler. *Bottom:* The final product. Note how closely the final case mirrors the waxups.



3D Systems' Projet DP 3000 Modeler

The **Projet DP 3000 Modeler** from 3D Systems is an automated system for printing waxups. Printed in a proprietary, ash-free, light-cured resin in smooth layers, the waxups can be cast or pressed using conventional techniques and used to produce full crowns, copings, bridges, partial frameworks and surgical guides. The system can generate as many as 100 units per print cycle and features an open architecture that allows file transfer from any open scanner. For more information, call 803-554-3607 or visit www.3dsystems.com.

