

# E.max Veneerlay on the Lower Left First Molar



**Solutions featured:**

3Shape TRIOS intraoral scanner  
3Shape Dental System





Fig. 1 (i)



Fig. 1 (ii)

#### Treatment plan

After analysis of the clinical condition of the tooth, we can see a lingual crack and an occlusal-mesial leakage of the amalgam. Due to the large size of the defective restoration, the treatment choice is to use an indirect bonded restoration – veneerlay type. This technique will better preserve tissue, which is important to the patient.

#### Treatment

The amalgam is removed using a surgical drape (dental dam) to protect the patient from exposure to mercury. The dental dam also allows to secure the bonding procedure and reduce the risk of bacterial contamination of dental tissues. (Fig. 2)

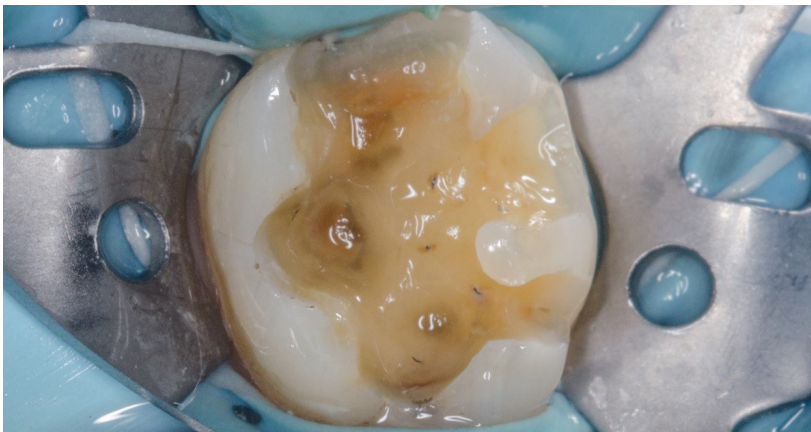


Fig. 2

#### Case Information

The patient presents for consultation with cold pain on the left. On clinical examination, the lower left first molar presents a dental amalgam restoration. The patient is looking for a solution that is both aesthetic and functional in the long term. He also wants the pulpal vitality of the tooth to be preserved if possible. (Fig. 1i, ii)



Fig. 3

In order to preserve the dental tissues as much as possible, the cavity is filled with an Inspiro Body i3 composite resin.

The tooth is then prepared for the veneerlay:

- Occlusal reduction of 1 mm.
- The proximal areas are prepared because they are not supported or restored by composite. The preparation goes below the proximal contact points, avoiding mechanical stress at the tooth-restoration junction.
- The vestibular surface preparation is also minimal, to ensure the aesthetics of the restoration. In this area, the enamel is preserved to obtain optimal bond strength. (Fig. 3)

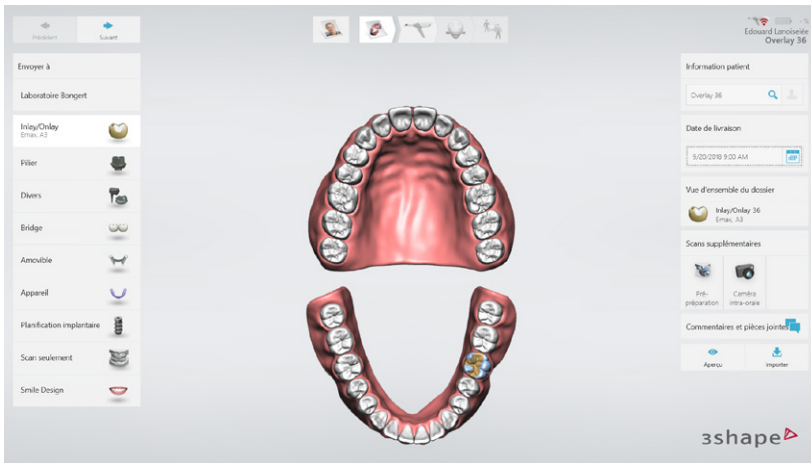


Fig. 4

The selected restoration material is a lithium disilicate–reinforced ceramic (e.max, Ivoclar Vivadent). This ceramic has excellent optical and mechanical properties, including highly bondable.

The assistant prepares the order form for the lab while the dentist polishes the preparation. (Fig. 4)

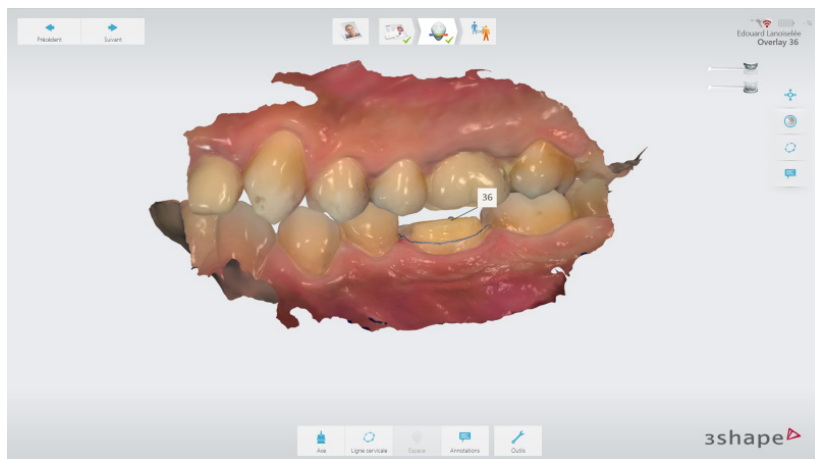


Fig. 5 (i)



Fig. 5 (ii)

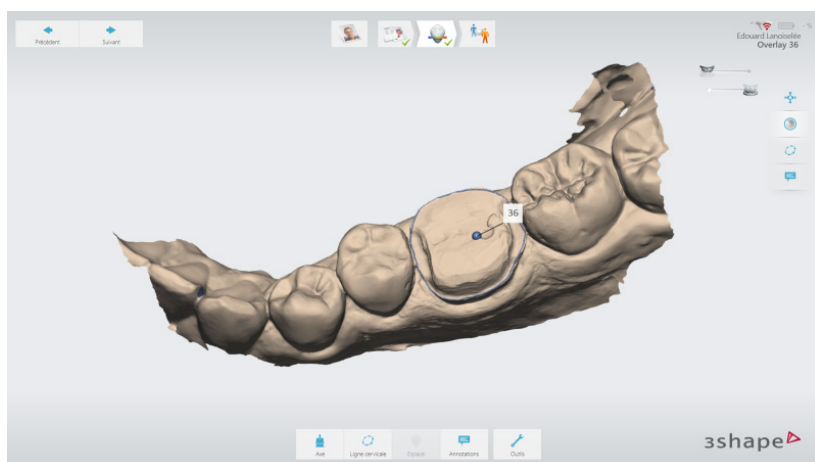


Fig. 5 (iii)

The digital impression is performed with a 3Shape TRIOS 3 Wireless scanner in the MOVE setup. This allows the patient to follow the impression in real time.

In addition, we can explain to the patient the type of preparation performed, in line with his expectations in terms of aesthetics and tissue preservation.

The margin is drawn in front of the patient. In this way, he can assess the accuracy of the impression system as well as the quality of the work done by the dentist. (Fig. 5 i-iii)

The digital impressions and clinical photos are then sent to the prosthesis laboratory via the 3Shape Communicate platform. This enables us to check that the files have been received and viewed by the prosthesis laboratory, as well as to discuss the case, if necessary. As the data is protected, medical confidentiality is respected.

The files are sent to the Digital-LABS laboratory – the digital division of Laboratoire Bongert (La Roche-sur-Yon, France). The case was designed using 3Shape Dental System CAD software solution (version 2.18.1.0).



The laboratory cleans the received raw impression file to optimize it. (Fig. 6 i-iii)

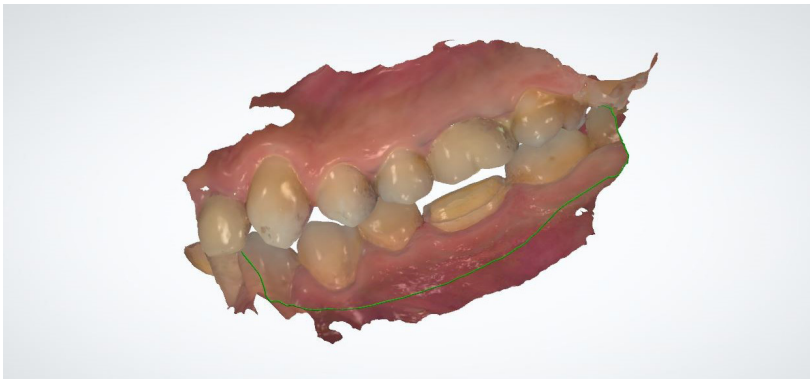


Fig. 6 (i)



Fig. 6 (ii)



Fig. 6 (iii)

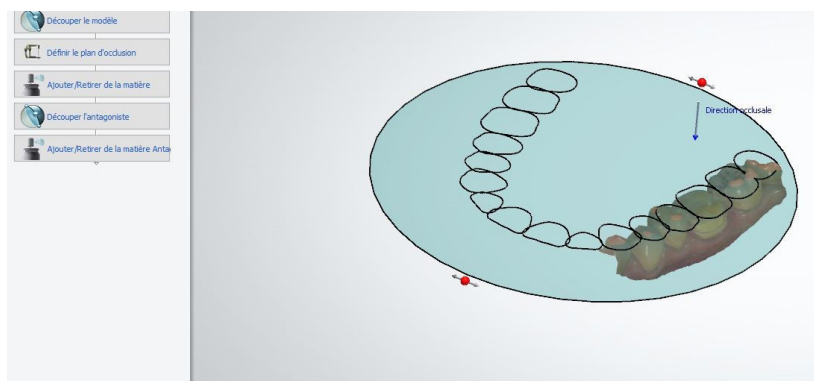


Fig. 7

A feasibility check is performed on the clinical preparation, the occlusion and the shade information of the stump and the adjacent teeth acquired by the scanner.

The restoration is designed according to the following protocol:

Positioning of the model on the virtual mounting table (Fig. 7)



Fig. 8

Inspection and adjustment of the restoration margin (Fig. 8)

Setting of the insertion direction of the future restoration (Fig. 9)

Modeling of the restoration based on an appropriate library morphology

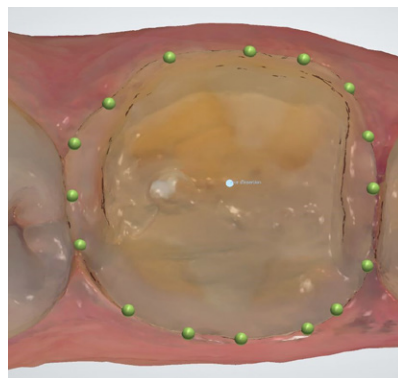


Fig. 9

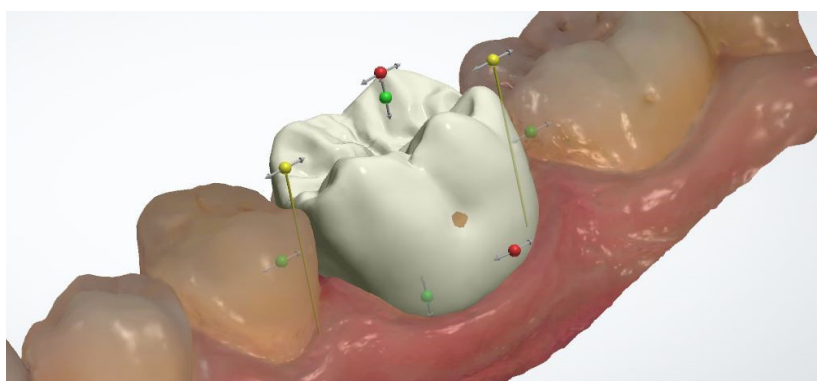


Fig. 10 (i)

Adjustment of the morphology to the clinical situation (Fig. 10i, ii)

Connection of the morphology to the margin line

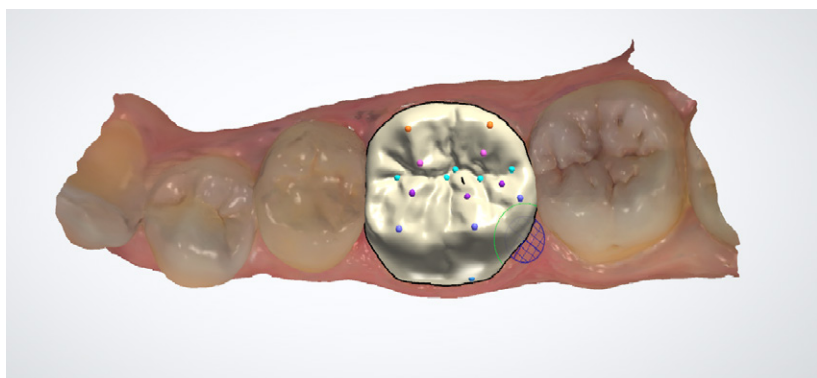


Fig. 10 (ii)

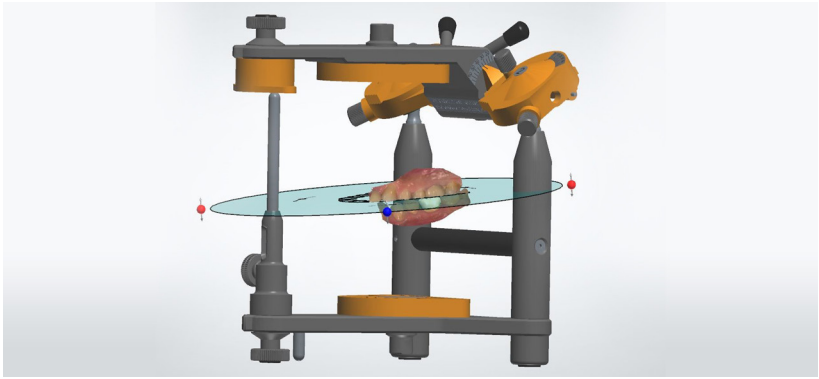


Fig. 11

Checking of the dynamic occlusion with the virtual articulator (Fig. 11)

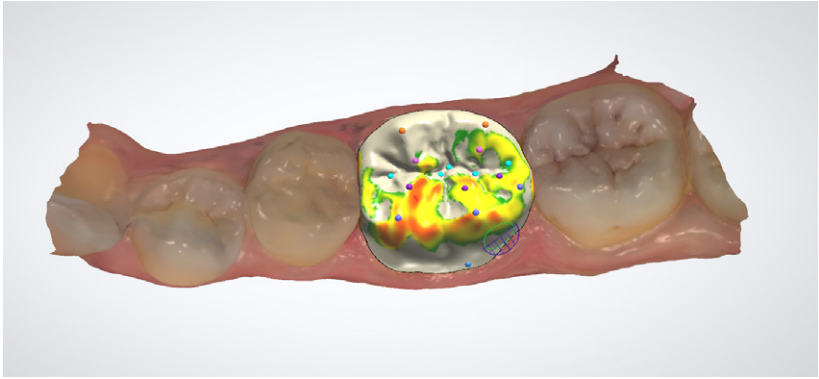


Fig. 12

Validation of the restoration for manufacturing (Fig. 12)

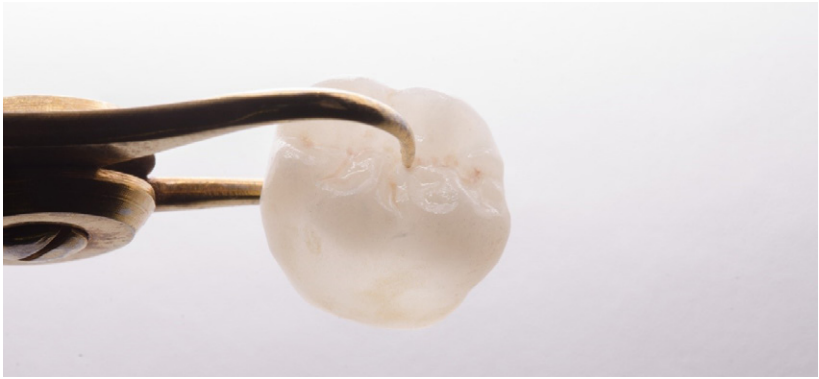


Fig. 13

The restoration is now ready to be manufactured in the laboratory, and then stained and glazed to ensure an optimal aesthetic result. (Fig. 13)



Fig. 14 (i)



Fig. 14 (ii)



Fig. 14 (iii)

At the laboratory, the impression is trimmed and then mounted in an articulator. This allows to work on a printed model. The latter will be used to check the fit of the restoration in terms of contact points and occlusion. (Fig. 14 i-iii)



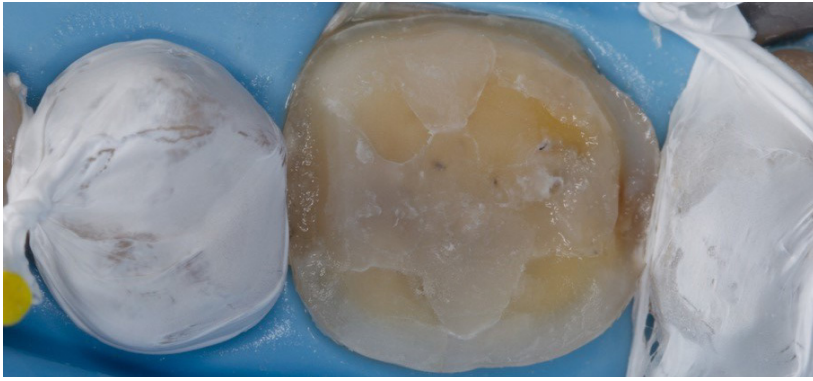


Fig. 15 (i)



Fig. 15 (ii)

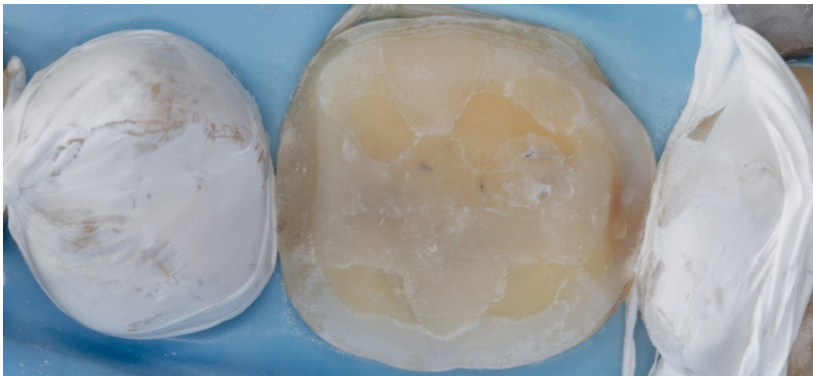


Fig. 15 (iii)

For the bonding session, multiple surgical drapes are placed. This allows to control the insertion direction and the position of the prosthesis. The restoration is conditioned by etching with hydrofluoric acid and then applying a silane. (Fig. 15 i-iii)

The bonding procedure is as follows:

- Sandblasting of surfaces with 50-micron alumina
- Rinsing, then etching (30 sec for enamel, 5 sec for dentin)
- Abundant rinsing and thorough drying without drying out the dentin.

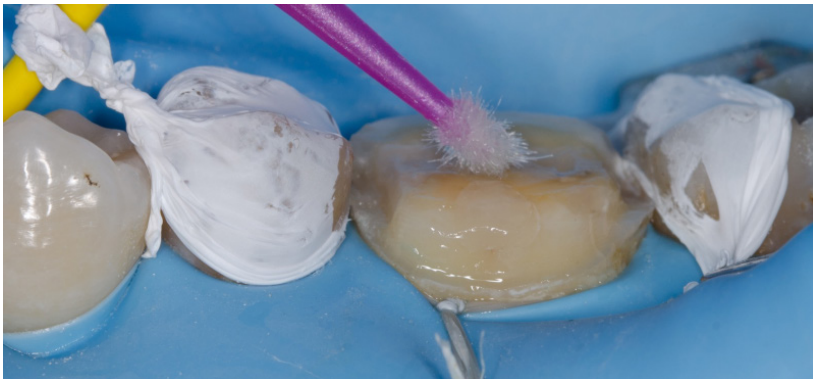


Fig. 16

A universal bonding agent is applied (GC G-Premio BOND), the surfaces are rubbed for 15 seconds to let the agent penetrate inside and then dried out to evaporate the solvents. (Fig. 16)

The previously heated Inspiro body I3 composite is applied on the inner surface of the restoration, and the restoration is then placed in mouth.

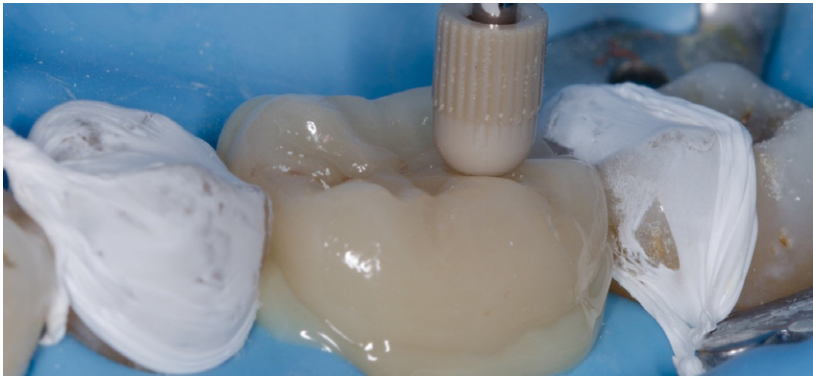


Fig. 17

The use of a condensation tip (C20 tip, Acteon) allows maximum insertion of the prosthetic part because of the viscosity of the heated composite. (Fig. 17)

The excess is removed with a brush wetted with modeling resin (GC), which also allows to smooth the joint.

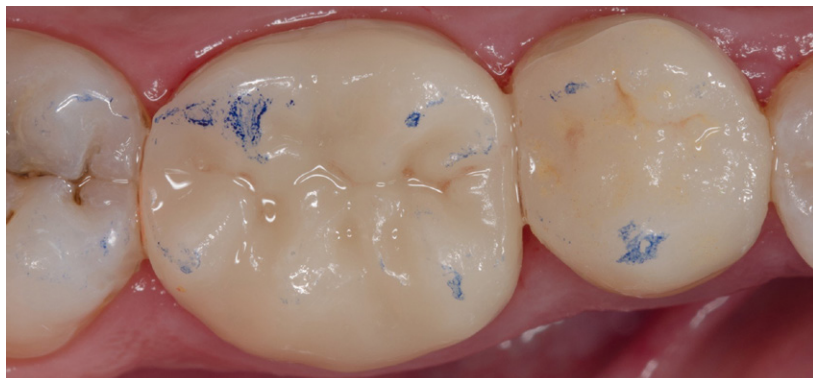


Fig. 18

After a first polishing under dam and a second after removal of the surgical drape, the occlusion is checked statically and dynamically. (Fig. 18)

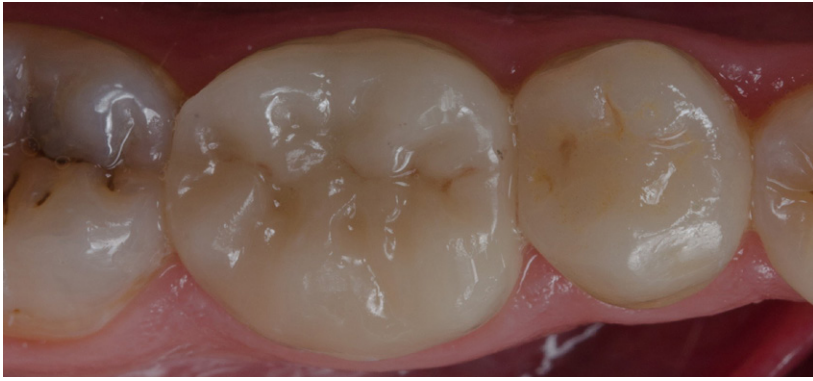


Fig. 19 (i)



Fig. 19 (ii)

#### Checking the restoration at 8 days

The teeth of the jaw are rehydrated; the bonding joint is barely visible. Aesthetics and function are restored according to the patient's expectations. (Fig. 19i, ii)

#### Conclusions

The architecture of the 3Shape software allows to validate each step of the restoration design. It also gives us the possibility to go back through the workflow without loss of data.

Creating a prosthetic design is therefore simpler, more accurate and faster than with any other software.

The color surface technology of the DCM file facilitates the treatment of the tooth in its natural environment. This feature thus allows to reproduce a realistic design.

# About Dr. Édouard Lanoiselée

Dr. Lanoiselée is a general practitioner in a group practice in Nozay (France).  
He graduated from the Faculty of Dentistry in Nantes (France) in 2008.

Dr. Lanoiselée has always maintained a link with the faculty since his graduation, whether for clinical supervision of students or for theoretical instruction at the graduate level. He is a lecturer for the University Diploma in Aesthetic Dentistry at the University of Nantes, for the Master 1 in Biology and Health, as well as for the higher education certificates.

Dr. Lanoiselée has obtained several certificates in prosthesis (fixed, as well as partial and complete removable), and is a former teaching hospital assistant lecturer at the care, research and teaching center of the Faculty of Dentistry of the University of Nantes for the prosthesis department.

He has been a user of CAD/CAM systems since 2009, and regularly speaks at conferences on topics related to aesthetic dentistry and digital workflow.

# About 3Shape

3Shape is changing dentistry together with dental professionals across the world by developing innovations that provide superior dental care for patients. Our portfolio of 3D scanners and CAD/CAM software solutions for the dental industry includes the multiple award-winning 3Shape TRIOS® intraoral scanner, the 3Shape X1® CBCT scanner, as well as market-leading scanning and design software solutions for both dental practices and labs.

Two graduate students founded 3Shape in Denmark's capital in the year 2000. Today, 3Shape employees serve customers in over 100 countries from 3Shape offices around the world. 3Shape's products and innovations continue to challenge traditional methods, enabling dental professionals to treat more patients more effectively.