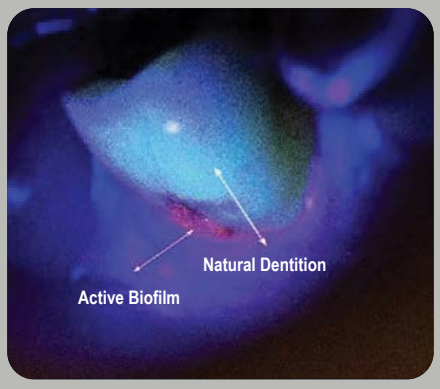
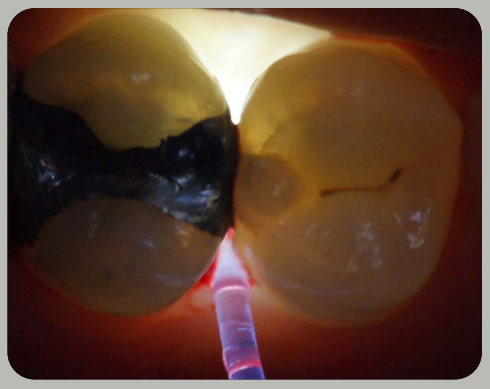
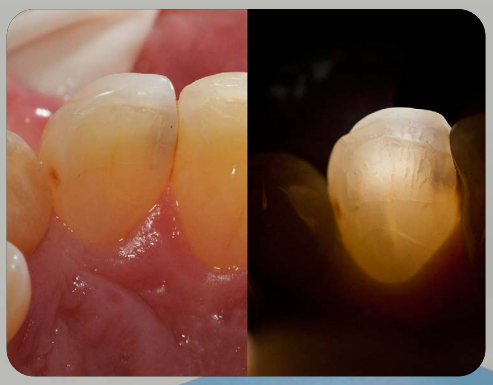
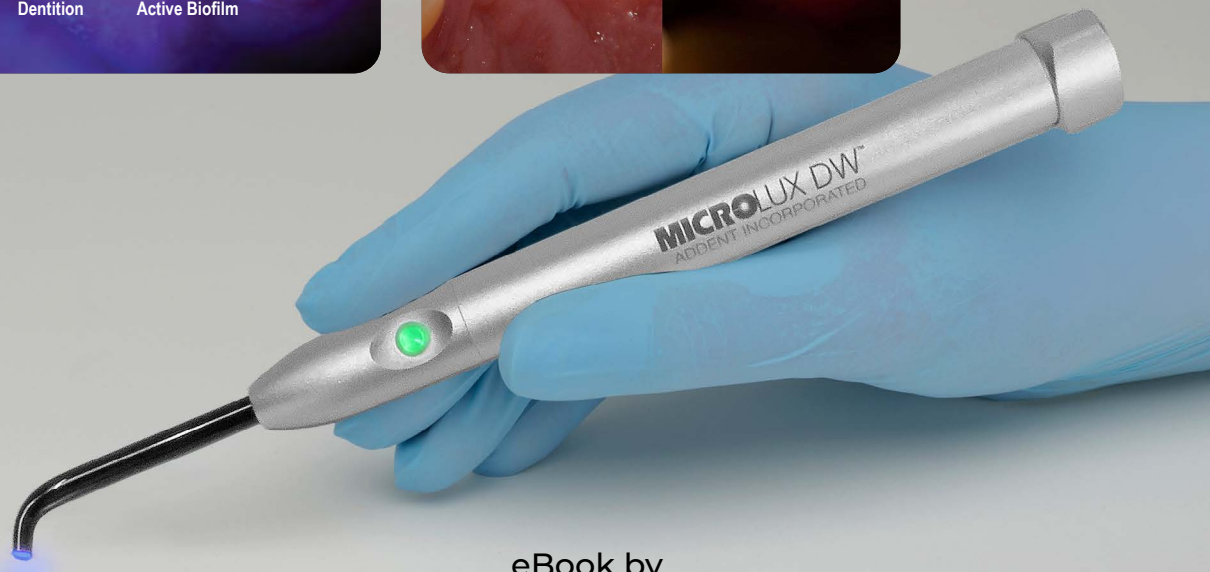
MICROLUX DW ILLUMINATOR

Enhance the *Accuracy* of Diagnostic Evaluations









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Advancing Dental Excellence

Introduction

WITH THE MICROLUX DW ILLUMINATOR, conducting a comprehensive diagnostic exam is made easy with just one instrument. It allows you to detect defects in teeth using visible white light transillumination mode plus biofilm and bacteria using fluorescence illumination mode. This enhances the accuracy of your diagnostic evaluations.

Visualizing bacteria is critical because its presence affects the outcome of your procedures. Therefore, having the ability to locate it accurately is essential.

"Biofilm is an ever-present risk that impacts the entire spectrum of oral health, with its most common manifestation being plaque. Indeed, one of the largest toothpaste manufacturers refers to it extensively in their current campaigns. However, biofilm is omnipresent across most other significant areas of reactive dental treatment, increasing infection risks in peri-implantitis, periodontitis, and endodontic disease in the oral cavity."[1]

Secondary caries at the crown margin (black arrow) caused by the accumulation of biofilm in the crevice between crown and tooth. Hyperplastic gingiva (white arrows) due to increased plaque accumulation in the connector area of the fixed partial denture. The connector of the bridge has a bulky design which complicates interdental hygiene

Image courtesy of Marit Oilo

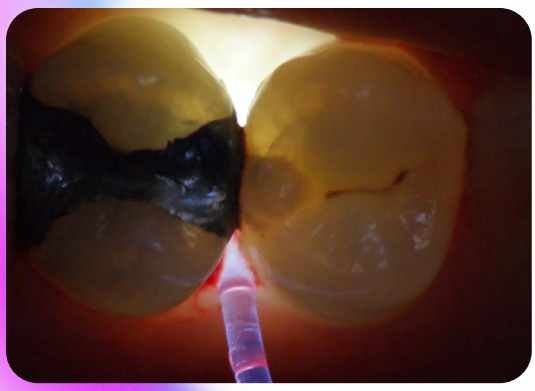
Chapter 1

How the **Microlux DW** aids in effective diagnosis

THE MICROLUX DW'S DUAL WAVELENGTHS provide enhanced diagnostics, saving time and reducing costs. Using it before any procedures can prevent failures and the need for return visits.

Use of the Microlux DW white light transillumination[2]:

- Visualizing teeth for cracks, fractures, calculus, and Caries
- Visualize existing composites for marginal defects and microleakage
- Checking Inlays and Onlays for micro-cracks or crazes before cementation
- Evaluation of enamel discoloration, including white spot lesions
- Visualization of the Root Canal and root fractures



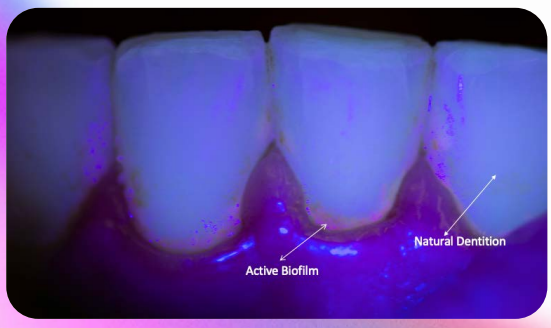
Images courtesy of Howard Strassler, DMD, Mark Pitel, DMD, and John Burgess, DDS

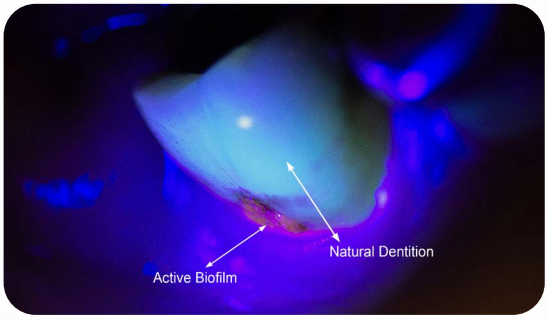
Chapter 1 How the **Microlux DW** aids in effective diagnosis

USE OF THE MICROLUX DW fluorescence illumination:

- Visualize Biofilm
- Visualize caries bacteria.
- Evaluation of White Spot Lesions and Demineralization
- Evaluation of Micro-leakage
- Visualize Plaque for Perio and implant maintenance
- Fissure cleaning control
- Differentiate between tooth fluorescent vs. non-fluorescent restorative materials
- Distinguishing sound dentin before composite placement

COLOR EMISSIONS FROM 405NM FLUORESCENCE EXCITATION:	
Sound Tooth Structure	Green, Blue, or Aqua Blue
Bacteria (plaque or dental caries)	Orange to Red
Supra and subgingival calculus	Red or Deep Red





Images courtesy of Dr. Stephane Browet

Microlux DW is an ideal choice for everyday use as it is easy, safe, precise, and efficient.

Chapter 2 How **Microlux DW** aids in procedures

Having the ability to visualize tooth defects accurately is crucial for a successful procedure. The Microlux DW with transillumination mode, in many cases, provides more accurate information than X-rays alone, making it easier to identify the location and invasiveness of the problem. Additionally, the fluorescence mode highlights bacteria like plaque and caries in their early stages of development.

With the Transillumination mode of the Microlux DW, the light will transmit white light across the tooth. A tooth with caries, cracks, lesions, or an otherwise unhealthy tooth will interrupt the light beam in various ways. This feature helps you visualize the changes in color, texture, tooth surface appearance, and the presence or absence of shadows. Interpreting this information will aid immensely in your day-to-day diagnoses.[3]

Dentists can visualize defects at every step of each procedure, not just at the hygiene appointment. During a crown prep procedure micro-cracks or crazes cannot be easily seen and may lead to microleakage over time. Because damaged tooth structure has a lower index of light transmission, even the slightest deviations can be detected.[3]

Because approximately one in five adults suffer from the more aggressive forms of periodontal disease, there is growing interest in the use of fluorescence diagnosis systems. Fluorescence can provide an endpoint to the scaling and root planning procedures that are undertaken by the dentist and dental hygienist.[4]

Using the fluorescence mode of Microlux DW lets you see “plaque and calculus which emits visible pink/red fluorescence from deposits of mature dental plaque on the surface of teeth, restorations, or dental appliances.”[5]

As a plaque indicator, the intensity of the red fluorescence produced by bacterial activity (bacterial porphyrins) makes it possible to control the presence and or complete removal of bacterial plaque during prophylaxis as well as during periodontal treatments. Moreover, the meticulous evaluation of restorative

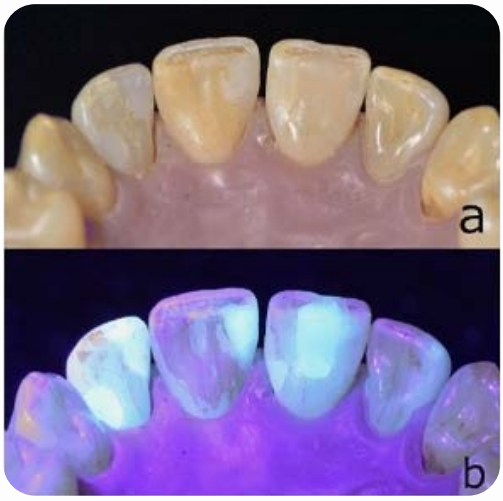
Chapter 2 How **Microlux DW** aids in procedures

margins with this light provides a valuable tool to check local plaque retention as well as possible leakage/dissolution of cement.[6]

The detection and removal of tooth-colored filling materials is a major challenge for every dentist. However, the fluorescence mode provides a noninvasive solution to differentiate composite resin material from the healthy tooth structure.

A failure to detect a filling may lead to unidentified excess material or undetected new pathological findings beyond the margins. Healthy tooth structure may be mistakenly removed or, conversely, composite remnants may be left behind during preparation because of difficulty distinguishing between tooth structure and composite. Composite remnants diminish the quality of later adhesive restorations. Overlooked fillings also lead to dental charting errors, which may result in false caries risk assessments and improper treatment.[7]

Using fluorescence as a noninvasive method for detecting composites can be beneficial. In terms of cleanup after orthodontic debonding, fluorescence visualization proved to be superior in terms of time needed and removal of composite remnants.[8]



Using fluorescence as a diagnostic tool for caries offers a less invasive method for treatment. It enables clinicians to visually identify the location of the disease, while also preserving as much of the natural tooth as possible. By isolating the affected tooth anatomy through autofluorescence, the incidence of unwanted complications, such as the removal of healthy tooth structure, increased tooth sensitivity, and compromised tooth vitality, can be reduced.[5]

Chapter 3 Conclusion

The Microlux DW Illuminator is an exceptional tool for a wide variety of procedures, thanks to its unique combination of white light transillumination and fluorescence (405 nm) illumination. It enables quick and easy detection of defects in tooth structure or biofilm that could potentially impact a patient's oral health. Unlike other devices, this one doesn't require any dyes that may leave stains on tooth enamel or restorative materials. Its intuitive design provides all the essential information needed while performing any evaluations or procedures, making it an indispensable tool for anyone in the field.

Examinations done with NearUV (NUV) at 405nm light on surfaces where active biofilm or calculus is present, allows for identification and removal. Consequently, the visualization and elimination of active biofilm may be a key preventive method to restore the balance in the biofilm to prevent further development of disease.[9]

Utilizing the Microlux DW Illuminator for fluorescence can greatly enhance the visibility of bacteria and previous restorative materials. This method can assist in the preparation of a restorative procedure, resulting in a higher-quality restoration and reducing the likelihood of future problems.

Using fluorescence as a diagnostic tool for caries offers a less invasive method for treatment. It enables clinicians to visually identify the location of the disease, while also preserving as much of the natural tooth as possible. By isolating the affected tooth anatomy through autofluorescence, the incidence of unwanted complications, such as the removal of healthy tooth structure, increased tooth sensitivity, and compromised tooth vitality, can be reduced.[5]

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Microlux DW Illuminator

The Microlux DW uses a powerful dual chip L.E.D. to provide visible transillumination as well as illumination in the NUV - 405 nm range. This product accepts all the Microlux autoclavable accessory light guides and mirrors.

The unit comes with two different light guides:

1. Clear light guide for Illumination and transillumination.
2. Filtered light guide for NUV 405 nm applications.

The Microlux DW has a rechargeable battery and voltage regulator which provides consistent output for the L.E.D.s regardless of the battery level.

Battery Life: Six continuous hours in white light mode; 1.5 continuous hours in blue light mode

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