



AMERICAN ACADEMY OF FIXED PROSTHODONTICS 2012 SCIENTIFIC SESSION

FRIDAY, FEBRUARY 24, 2012



**WERNER H. MÖRMANN,
PROF. DR. DR. MED.DENT.**

BIOGRAPHICAL SKETCH:

Starting 1980 Dr. Werner Mörmann together with the engineer Dr. Marco Brandestini solved the problems of: fast 3D capturing of tooth preparations with a mouth-camera (1) and the fast custom machining of esthetic ceramic inlays, onlays and veneers (2). They completed the construction of the first CEREC 1 unit including the first operating software during the years

1981 to 1985. Dr. Mörmann bonded the first CEREC CAD/CAM inlay into the mod molar cavity of a patient on 19th September 1985 at the U. Zurich Dental School, Switzerland. To produce a first series of 25 CEREC 1 units Mörmann and Brandestini founded "Brains" Inc., Zurich, Switzerland. Cooperation with Siemens started in 1986 and continued with Sirona since 1997 to date.

Dr. Mörmann is a professor of operative dentistry, now retired but still active in doing research work in cooperation with his successor Dr. A. Mehl. He has published more than 150 articles and 10 books on chairside CAD/CAM technology and received the "Götz" (Medical Faculty, U. of Zurich) and the "Engel" (Academy of Continuing Education, Karlsruhe, Germany) awards. He is founder and president of the "Foundation for the Advancement of Computerized Dentistry" and has established the Department of Computer-based Restorative Dentistry at the U. Zurich Dental School.

LECTURE TITLE: "A Perspective on the Development of CAD/CAM Restorations"

LECTURE SYNOPSIS:

The development of CAD/CAM restorations specifically of CEREC ceramic reconstructions is based on the idea to replace metal by tooth-colored material in the oral cavity. In the 1980s dental porcelain and high-strength ceramics were the choice as alternatives. However, ceramics were available only via time-consuming firing. To make ceramics readily usable, new ways of processing had to be found. The idea formed of a fast computer-aided chairside method to generate indirect ceramic restorations while the patient is seated. To achieve this, first of all a 3D opto-electronical mouthcamera and data processing system had to be developed to enable the custom machining of individually fitting restorations. The CEREC 1 concept comprised a small mobile CAD/CAM unit integrating a computer with a monitor and keyboard, track-ball, foot-pedal and 3D-mouth-camera as input devices as well as a machining compartment, as filed in a Swiss patent application by W. Mörmann and the engineer M. Brandestini in December 1980. The challenge was to have all manufacturing components in one housing to make the system practical.

The original integrated technical concept carried through CEREC 1 and 2 versions. CEREC 2 was able to do partial and full crowns. My clinical team started doing anterior, premolar and molar crowns. In the year 2000 CEREC 3 was presented with the acquisition/design and milling functions housed in separate units. The machining unit was then equipped with a laser scanner and could now be used by dental technicians independently (inLab). Additionally an extra-oral scanner (inEOS) made the CEREC 3D optical system available for the dental laboratory.

Lecture Objectives

- Understand the basic idea behind the development of CEREC CAD/CAM,
- Learn that CAD/CAM is highly flexible to be used chairside as well as labside,
- Learn that CAD/CAM can automatically generate individually functional occlusal morphology using biogeneric software.