



## Academy of Prosthodontics Annual Scientific Session Ritz-Carlton, Sarasota Florida April 25 – April 29, 2017

### Program Speaker – Dr. Suzanne Scherrer

#### Title

*Grinding Damage Assessment on Dental Ceramics*

#### Abstract

The purpose of this presentation is to show surface and subsurface damage on 9 CAD-CAM ceramics after grinding with diamond disks of 75, 54 and 18  $\mu\text{m}$  and to estimate strength losses based on damage crack sizes. The materials tested were: 3Y-TZP (Lava), dense  $\text{Al}_2\text{O}_3$  (In-Ceram AL), alumina glass-infiltrated (In-Ceram ALUMINA), alumina-zirconia glass-infiltrated (In-Ceram ZIR-CONIA, Feldspar ceramic (Vita mark II), Lithium disilicate glass-ceramic (emaxCAD), Leucite glass-ceramic (Empress CAD), Hybrid-ceramic (Enamic) and a composite resin (LavaUltimate).

The induced chip damage was evaluated on the specimens' bonded interface by means of SEM. Fracture mechanics were used to estimate fracture stresses based on average and maximum chip depths considering these as critical flaws subjected to tension and to calculate possible losses in strength compared to manufacturer's data. Removal of the 75 and 54  $\mu\text{m}$  diamond induced chip damage is necessary for most silicate ceramics using sequentially finer diamonds.

#### Learning Objectives

1. Grinding damage as a function of grit size and type of ceramic
2. Fracture mechanics relating toughness strength and crack size
3. Thin ceramic margins and chipping issues

#### Biography

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SUSANNE S. SHERRER, Assoc Prof, Dr Med Dent

earned her degree from the University of Geneva (1984), followed by a 5 year training in Fixed Prosthodontics (Prof. Belser) (1984-89), doctoral thesis (1986) and Privat Docent thesis (2003). Visiting Assistant Professor, University of Texas HSC at San Antonio (Department of Restorative, Chair: Dr. Tom Berry) (1989-91). President of the Dental Materials Group of the International Association for Dental Research (2001-02). President of the Academy of Dental Materials (2002-04). Fellow Academy of Dental Materials (2012).