Number and distribution of restorations are always associated with the system of social insurance there. Therefore, we have to be continuously concerned about it.

## OIV-3 Does the Original Water Content in Acrylic Powder and Monomer Affect Curing Shrinkage?

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Curing of acrylic resin is accompanied by unavoidable dimensional change. The water content originally present in the acrylic powder and monomer as supplied by dental product manufacturers could affect optimal polymerization and have an adverse effect on the curing shrinkage.

**Aims** : The purpose of this study is (i) to determine the original water content of acrylic powder and monomer, and (ii) to investigate if dried acrylic powder and monomer produces a resin with reduced curing shrinkage.

**Materials and methods** : Trevalon C polymer powder was dried by silica gel in a desiccator at ambient temperature of 23℃ until it reached a constant mass between successive weighings. The monomer was dried by molecular sieve and its water content was determined by Karl Fischer titration. Fine reference crosses were marked in stainless steel moulds. Ten bar specimens(210mm × 11mm × 2.5mm) were polymerized in a hot-air oven(72℃ for 6.5h and 100℃ for 2.5h) and allowed to cool slowly inside the oven until the ambient temperature was reached. The distances between reference crosses were measured by a workshop travelling microscope with a resolution of 0.0005mm. Specimen made from powder and monomer supplied by the manufacturer were used as control.

**Results** : The original water content of polymer powder and monomer liquid was 0.8% and 0.06% by mass respectively. Acrylic resin made from thoroughly dried polymer beads and monomer with negligible water content showed a smaller curing shrinkage of 0.36% than control resin of 0.40%(t-test, $p<0.0001$).

**Conclusion** : Dry polymer and dry monomer produced improved acrylic resin with reduced curing shrinkage.

## OIV-4 Stress Analysis of Dental Implants Supporting Screw-Retained and Cement-Retained Prostheses

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The use of cement-retained implant prostheses is increasing due to improved occlusal anatomy, esthetics, and simplified laboratory procedure. Little is known about the biomechanics of cement-retained implant prostheses compared to that of screw-retained implant prostheses. To data, almost all studies of implant biomechanics have focused on screw-retained prostheses. The stress transferred to the implant fixtures through the cement-retained and the screw-retained prostheses were compared using a photoelastic and strain gauge