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[\[PDF \(240K\)\]](#) [\[References\]](#)**Water Durability of Resin Bond to Pure Gold Treated with Various Adhesion Promoting Thiirane Monomers**[Yoshinori KADOMA](#)¹⁾, [Katsunori KOJIMA](#)¹⁾, [Yoh TAMAKI](#)²⁾ and [Yoshiaki NOMURA](#)²⁾

1) Department of Applied Functional Molecules, Division of Biofunctional Molecules, Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University

2) Department of Preventive Dentistry and Public Health, Tsurumi University School of Dental Medicine

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Abstract:

Adhesion promoting monomers for precious metals, 2,3-epithiopropyl methacrylate (EP1MA), 4,5-epithiopentyl methacrylate (EP3MA), 9,10-epithiodecyl methacrylate (EP8MA), 10,11-epithioundecyl methacrylate (EP9MA), 9,10-epithiodecyl 4-vinylbenzoate (EP8VB), 2,3-epithiocyclohexyl methacrylate (EPCHMA), and 3,4-epithiobutyl 2,2-bis(methacryloyloxymethyl)-propionate (EP2BMA), were used as surface treatment agents for pure gold to improve the durability of resin bonds against water. Treated specimens were butt-jointed together with MMA-PMMA resins, and tensile bond strength was measured after 2,000 thermal cycles in water. Bond strength to precious metal alloys was also determined under the same condition to clarify the influence of metal composition.

The adhesion performance of thiirane monomers to pure gold highly depended on their chemical structure. EP3MA, EP8MA, EP9MA, EP8VB, and EP2BMA showed excellent performance, while EP1MA exhibited a moderate one and EPCHMA a poor one. The comparison of pure gold with precious metal alloys revealed the usefulness of pure gold as a standard, common adherend for bond strength evaluations.

Key words:

[Thiirane monomer](#), [Tensile bond strength](#), [Gold](#)

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