MEASUREMENT OF NORMAL FORCE CHANGE DURING PHOTOPOLYMERIZATION USING A PHOTORHEOMETER

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Measuring residual stress is important for evaluating the long-term quality of 3D-printed products that feature ultraviolet (UV) curable resin. In this study, the residual stress of UV-curable adhesive was evaluated by measuring the normal force acting on UV-cured resin filled between two plates, using a photo-rheometer. The normal force was generated rapidly when the UV curable resin was exposed to UV light. The change in the normal force then became more gradual. Increasing the UV intensity and thickness increased the normal force. The onset time of normal force generation became faster for thinner initial thicknesses and high UV intensity. There were positive correlations between the curing speed and UV intensity, as well as between the residual normal force and gap.