REAL TIME MONITORING OF PHOTOPOLYMERIZATION REACTIONS VIA NIR/MIR-PHOTORHEOLOGY

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Photopolymerization has gained increasing attention due to its application in more advanced fields such as biomedicine and 3D-printing. Employed, state-of-the-art photopolymer resins (e.g. acrylates, thiol-ene, epoxy-based, hydrogels) usually consist of a variety of thermosetting monomers, which makes monitoring of the curing reaction and post-characterization of the final materials challenging. This has subsequently called for the development of more versatile analytical instruments to enable *in situ* characterization of such light-triggered thermoset formations.

Herein, we present a hyphenated measurement set-up with an infrared spectrometer (options for near- and mid-IR analysis), a plate-plate rheometer, a UV/VIS or LED light source, and an additional Peltier heating option [1]. This unique instrument prototype enables the real time evaluation of chemical and mechanical photocuring characteristics for a wide spectrum of photopolymerizable formulations.

[1] Gorsche, C.; Harikrishna, R.; Baudis, S.; Knaack, P.; Husar, B.; Laeuger, J.; Hoffmann, H.; Liska, R. *Analytical Chemistry* **2017,** 89 (9), 4958-4968.