DESIGNING AND BUILDING A MICROMANIPULATOR STATION AS FOUNDATION FOR ENGINEERING AN ARTIFICIAL SECRETORY GRANULE

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Based on models of previously constructed micro-manipulation and observation devices, a micromanipulation station was built that allows the viewing of degradation characteristics of cross-linked polymer networks that mimic the human body's secretory granules in delivering triggered, site-specific release of biochemicals. The station includes an Olympus IX-70 microscope and a JAI A-50 camera which interfaces with a computer through National Instruments' signal conditioning software and hardware. The degradation characteristics of the hydrogels are observed, captured, and studied with the micromanipulation station to reveal their reaction under physiological conditions. Biodegradable hydrogels are synthesized with a symmetrical oligo-glycolate and oligo-lactate esters terminated with vinyl hydroxypropyl methacrylamide (HPMA) in an effort to find effective vehicles for delivery of site and event-specific delivery of biochemicals in the human body.