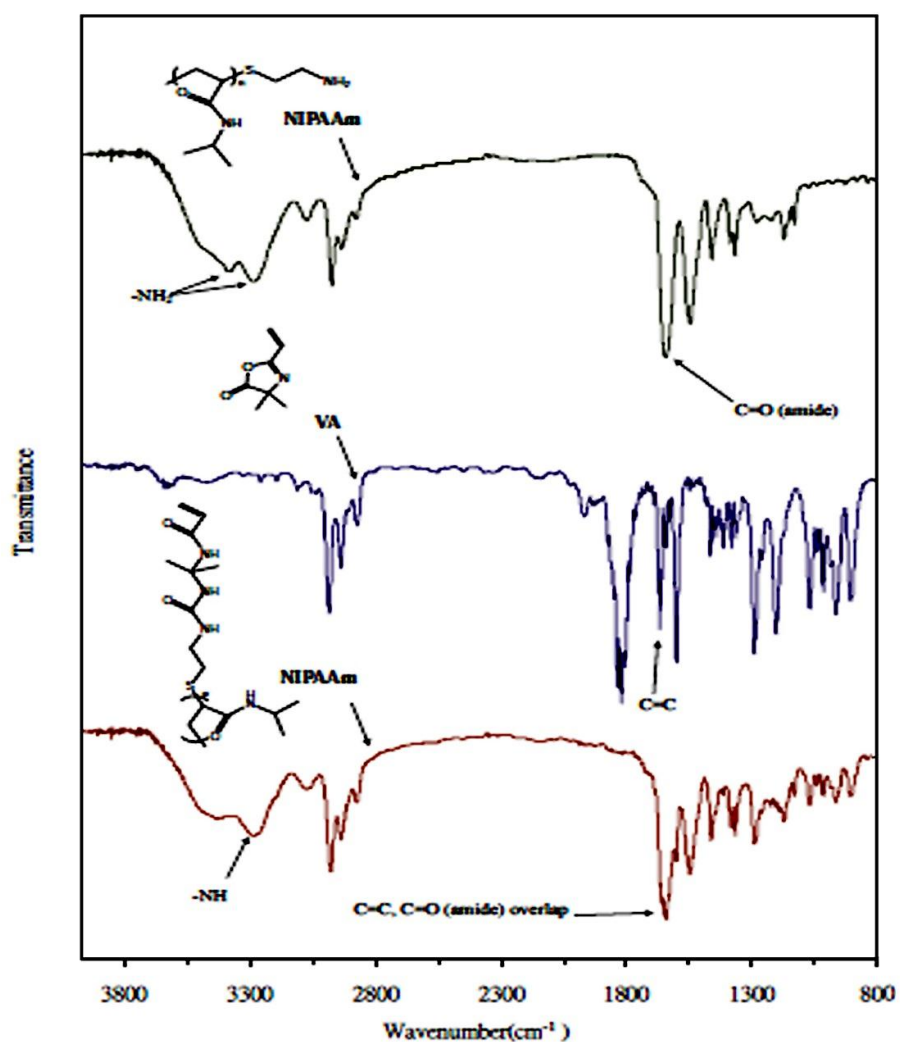
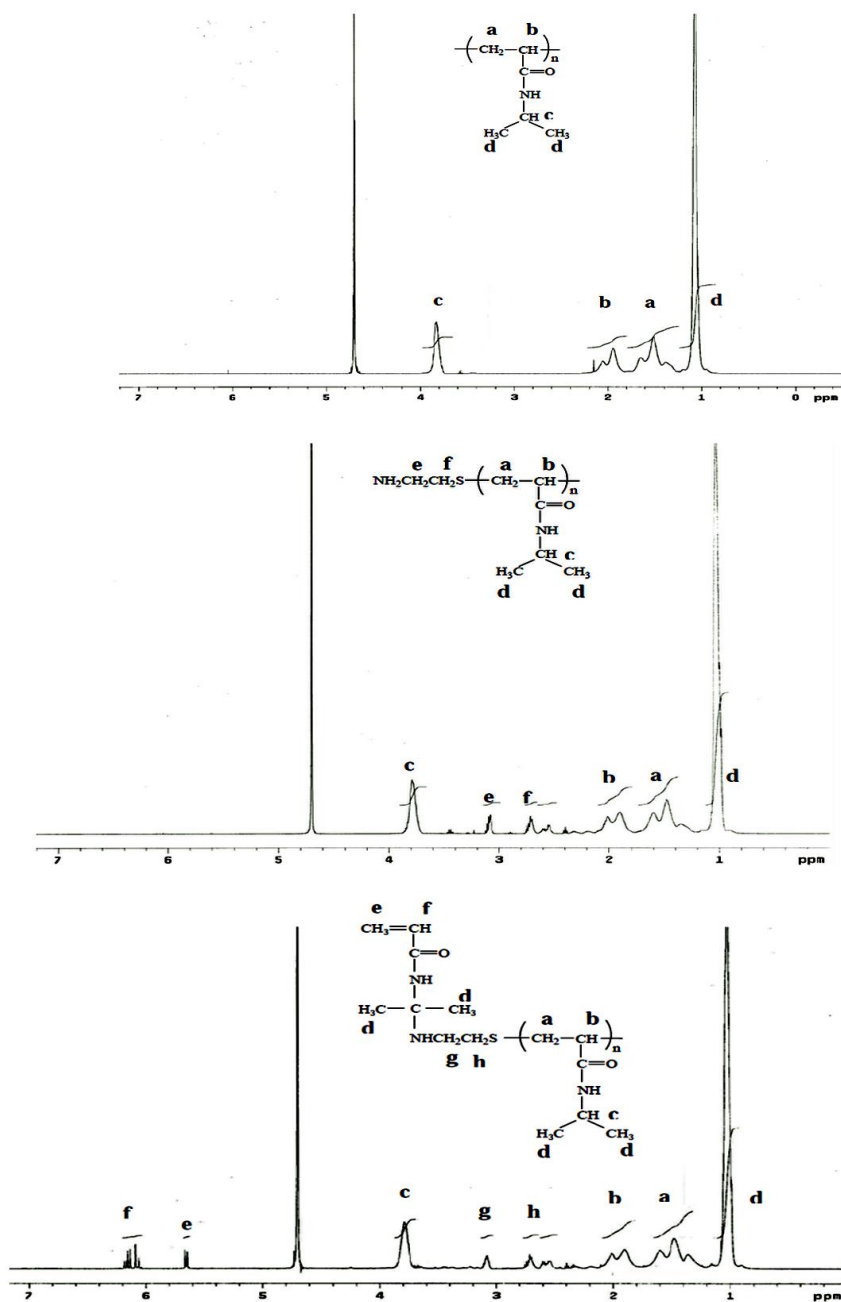


Supporting information



S 1: Structural confirmation of macromer of NIPAAm by FT-IR

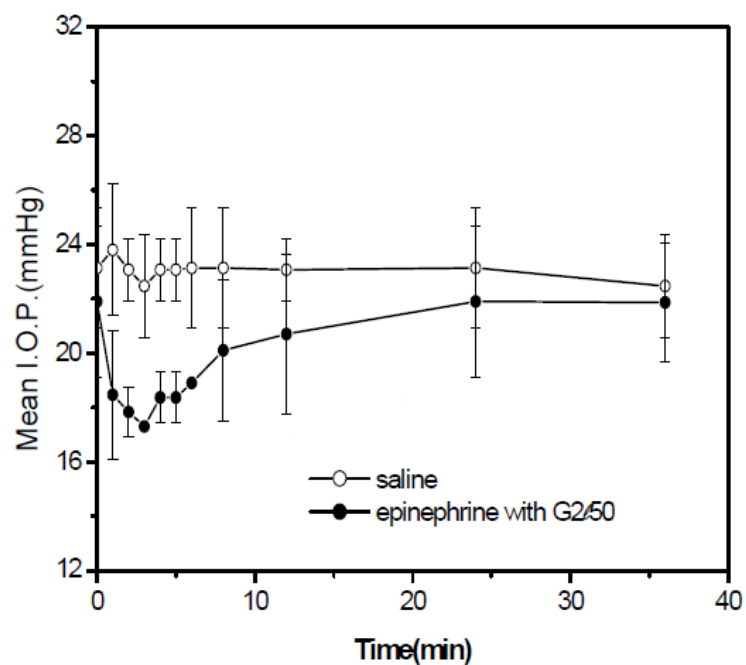


S 2: Structural confirmation of macromer of NIPAAm by ^1H -NMR

Animal experiments

Intraocular pressure (IOP) was monitored everyday prior one week before the animal experiments on New Zealand white Female rabbits. A drop of anesthetic (0.5% alcain proparcaine hydrochloride) was injected into the rabbit's eyes. The cornea of the rabbits was positioned vertically contacted by the calibrated Bio-rad ophthalmic tonometer and measured their IOP. The rabbits were divided into two groups: experimental and control groups. 10 wt% of copolymer and 0.2 wt% of [^3H]-epinephrine was used to experimental groups. 25 μl of drug mixed copolymer were dropped into rabbits right eyes and 25 μl of PBS solution was dropped into left eyes as experimental and control group, respectively. The IOP were determined every one hour and measurement was continued until the IOP no longer significant change observed.

An efficient drug delivery have been demonstrated in the synthesized graft PAAC-g-PNIPAAm copolymers due to their film-forming behavior, which can overcome the rigid film formation on the surface of the cornea, as demonstrated in an animal study (Supporting Information S3). The significant lowering effect on IOP was observed after administration of the polymeric eye-drops ([^3H]-epinephrine contains graft PAAC-g-PNIPAAm copolymers) on a rabbit, which suggests that the synthesized graft PAAC-g-PNIPAAm copolymers in the eye drops had a beneficial effect on the sustained delivery. However, more detailed investigations are required to elaborate and are currently in progress.



S 3: Mean IOP measured in rabbits after administration of polymeric eyedrops ($[^3\text{H}]$ -epinephrine contains graft PAAc-*g*-PNIPAAm copolymer)