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Laponite concentration optimized for the thermoresponsive gelation of PEG-rich PLGA-PEG-PLGA/laponite solution[1] KEISHI TANIMOTO, TOMOKI MAEDA, ATSUSHI HOTTA, Department of Mechanical Engineering, Keio University — The aqueous solution of poly (D,L-lactic acid-co-glycolic acid)-b-poly (ethylene glycol)-b-poly (D,L-lactic acid-co-glycolic acid) (PLGA-PEG-PLGA) changes from sol to gel states by increasing temperature. Considering the biomedical use of PLGA-PEG-PLGA as e.g. an injectable drug delivery material, lowering the solute concentration of the hydrogel with a lower molecular weight of the PLGA block is highly significant. Our group has recently developed a high water-content hydrogel composed of laponite, an inorganic nanoparticle and PLGA-PEG-PLGA with a relatively small PLGA block (PLGA-PEG-PLGA of 800-1500-800) at the solute concentration of 3.9 weight percent. In this study, the laponite concentration was optimized for the synthesized PLGA-PEG-PLGA with different molecular weights of PLGA ranging from 250 g/mol to 1900 g/mol. The molecular weight of PEG was fixed at 1500 g/mol. It was found that as the molecular weight of PLGA decreased from 1900 g/mol to 250 g/mol, the laponite concentration required for the thermoresponsive gelation of aqueous PLGA-PEG-PLGA/laponite solution slightly increased to 1.25 weight percent

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