

BRANCHED POLY(ETHYLENEIMINE)-BASED WATER SOLUBLE TYPE-I POLYMERIC PHOTOINITIATORS

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In this work, two novel polymeric photoinitiators (PPIs) (PEI-I2959 and PEI-I2959-Ts) were synthesized with migration stability and a water solubility 7-9 times higher than that of I2959 through incorporation of I2959 units into branched poly(ethyleneimine) (bPEI) ($M_w = 1800$ g/mol) core which gives enhanced hydrophilicity to the PPIs (Figure). The PPIs have also visible light absorption even though it is not as prominent as UV absorption. Therefore, their photoefficiencies were studied under both UV and visible light irradiation. Furthermore, the PPIs can take part in an aza-Michael addition reaction which occurs between the unreacted primary and secondary amines on bPEI and acrylates, i.e. they have dual-curing ability. According to the cytotoxicity studies, PEI-I2959-Ts is highly biocompatible and PEI-I2959 also shows reasonable cell viability.

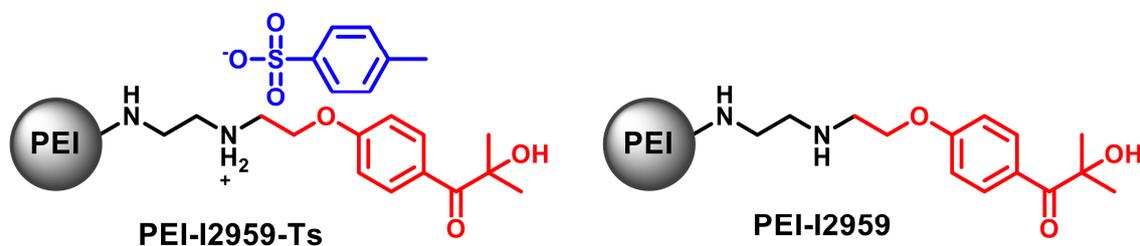


Figure. The structures of the novel PPIs.