

Influencing polymer solubility with thermally-responsive diels-alder monomers

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Using Diels-Alder (DA) chemistry, two monomers were designed to contain a DA adduct and a polymerizable unit such that cyclo-reversion would yield either the maleimide or the furan unit attached to the polymer chain. These thermally responsive monomers were then copolymerized with N-isopropylacrylamide (NIPAM) via reversible addition-fragmentation chain-transfer (RAFT) polymerization to yield linear copolymer structures. Using UV-Vis Spectroscopy, it was determined that solution-state thermal properties were influenced by a number of variables such as comonomer feed ratio, polymer chain end functionality, polymer backbone length and composition. [figure1]

