

# A Low Temperature Alkoxyamine Designed for Use in Nitroxide-Mediated Miniemulsion Polymerization

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This project builds upon previous research into developing oil-soluble nitroxides designed for use in controlled miniemulsion polymerizations below 100 °C. Use of traditional nitroxides (e.g. 2,2,6,6-tetramethyl-piperidine-N-oxyl, TEMPO, **and its derivatives**) normally proceeds at high temperature (125-135 °C), so a pressurized vessel is required for polymerization in aqueous media which is a significant limitation. A novel hydrophobic alkoxyamine, 2,2,5-trimethyl-3-(1-phenylethoxy)-4-*tert*-butyl-3-azahexane (Styryl-TITNO), has been synthesized successfully and evaluated first by studying the efficiency of Styryl-TITNO-mediated solution polymerization of styrene and n-butyl acrylate at 90 °C. Living polymerization characteristics and the role of free TITNO in the solution of polymerizations will be reported. **Preliminary studies** of Styryl-TITNO nitroxide-mediated miniemulsion polymerization of n-butyl acrylate will also be presented.

## **References:**

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