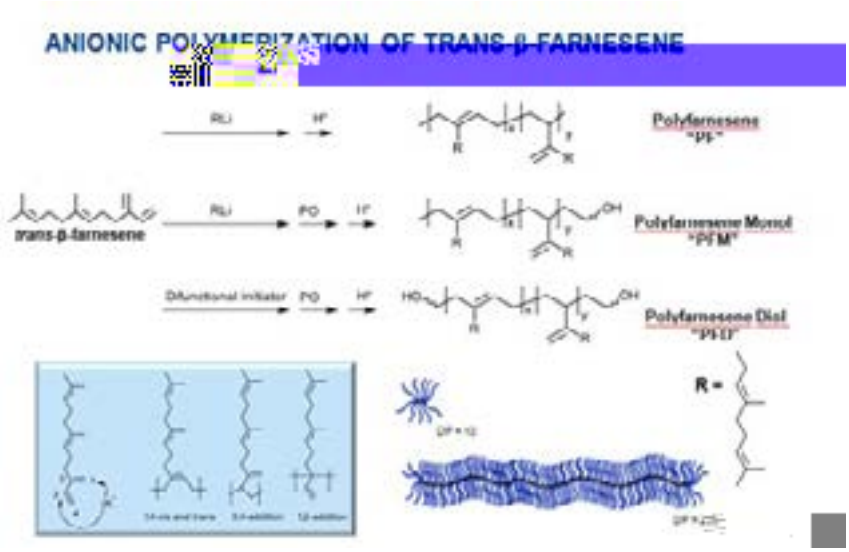
The synthesis and characterization of farnesene-based polyols

Steven K Henning
7RWDO 3HWURFKHPLFDO 5HÀQLQJ 86$,QF 86$

A bio-based route to the production of trans-β-farnesene has recently been commercialized. Trans-β-farnesene is capable of being polymerized by both anionic and cationic pathways, creating low molecular weight polymers with structure-property relationships unique within the diene class of monomers.

Trans-β-farnesene is produced through fermentation of sugar feedstocks. The pathway offers an alternative to petroleum-based feedstocks derived from cracking processes. Anionic polymerization of the monomer produces a highly branched "bottle-brush" structure, with rheological and thermal properties that are markedly different than those of traditional linear diene polymers. Specifically, a lack of entanglements is observed even at relatively high molar masses.

The synthesis and characterization of trans-β-farnesene-based polymers will be presented, including anionically prepared low molecular weight diols and monols. Their utility as novel polyols in various end-use applications such as prepolymers for polyurethane synthesis will be reviewed.



Biography

6WHYHQ . +HQQLQJ LV 7RWDO &UD\ 9DOOH\¶V *OREDO 'LUHFWRU IRU 5HVHDUFK DQG 'HYHORSPHQW 6DUWRPHU &RPSDQ\ +LV FDUHHU EHJDQ DW 7KH *RRG\HDU 7LUH DQG 5XEEHU &RPSDQ\ LQ $NURQ 2+ Z &RUSRUDWH 5HVHDUFK 1RUWK $PHULFDQ 7LUH 'LYLVLRQ DQG ODWHU IRU *RRG\HDU¶V &KHPLFDO 'LYL +HQQLQJ UHFHLYHG KLV %6 GHJUHH LQ 0DWHULDOV 6FLHQFH DQG (QJLQHHULQJ IURP 7KH 3HQQV\OYDQ 6FLHQFH IURP WKH 8QLYHUVLW\ RI $NURQ +H LV LQYHQWRU RQ RYHU 86 DQG LQWHUQDWLRQDO SDW

Steve.henning@total.com

Notes: