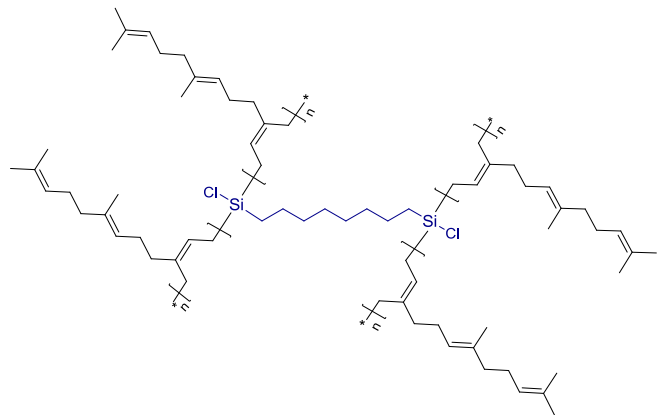


Sample Name:

## 4-Arm Star 1,4-POLYFARNESENE

*Core: 1,8-bis(chlorosilyl)octane*

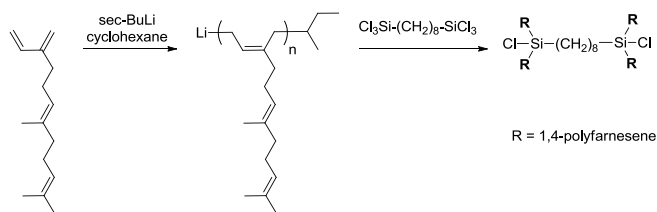
Sample # **P18518-4-Farne**



$M_n$ (arm), g/mol	$M_n$ (total), g/mol	$M_w/M_n$
$10.5 \times 10^3$	$40.0 \times 10^3$	1.13

### Synthesis:

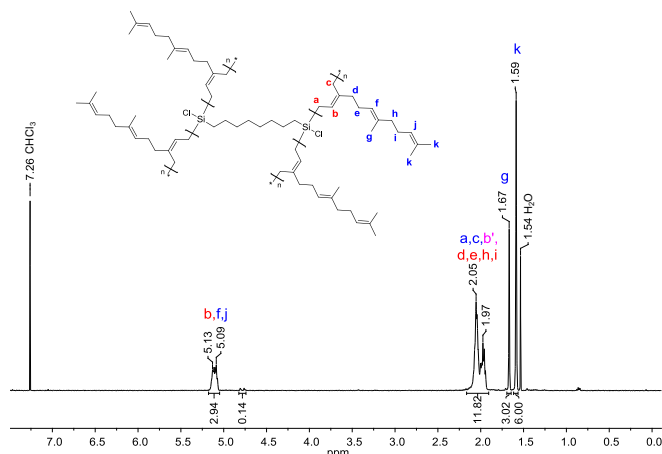
1,4-polyfarnesene (PF) was synthesized by anionic living polymerization of  $\beta$ -farnesene in cyclohexane using sec-BuLi as an initiator. The obtained product (4 equivalents) was coupled with 1,8-bis(trichlorosilyl)octane (1 equivalent) resulted in four-arm star 1,4-polyfarnesene.



### Characterization:

The absolute molecular weight and polydispersity index (PDI) were determined by size exclusion chromatography (SEC) using light scattering (LS) detector. SEC analysis was performed on a Varian ProStar liquid chromatograph equipped with UV-vis, RI and LS triple detector from Viscotec, three SEC columns from Supelco (G6000-4000-2000 HXL), and using THF as an eluent.

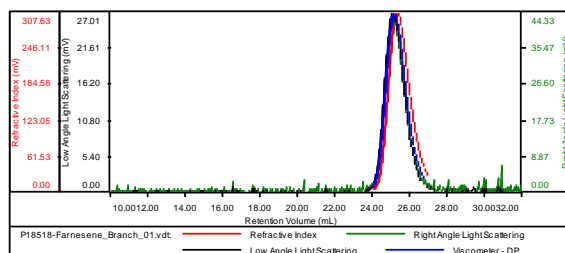
$^1\text{H}$  NMR (500 MHz,  $\text{CDCl}_3$ ) spectrum of star PF.



1,4-Polyfarnesene contains  $\leq 7\%$  of 1,2-polyfarnesene.

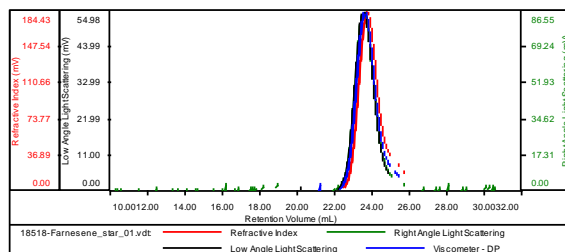
SEC elugrams: (a) PF arm, (b) star PF.

(a)	Concentration (mg/mL)	19.8284
	Sample dn/dc (mL/g)	0.1270
	Method File	PS80K-Feb20-2014-0000.vcm
	Column Set	3x PL 1113-6300
	System	System 1



Sample	$M_n$	$M_w$	$M_p$	$M_w/M_n$	IV
P18518-Farnesene_Branch_01.vdt	10,893	12,609	13,140	1.158	0.0860

(b)	Concentration (mg/mL)	10.7692
	Sample dn/dc (mL/g)	0.1270
	Method File	PS80K-Feb20-2014-0000.vcm
	Column Set	3x PL 1113-6300
	System	System 1



Sample	$M_n$	$M_w$	$M_p$	$M_w/M_n$	IV
18518-Farnesene_star_01.vdt	39,711	44,923	44,892	1.131	0.1524