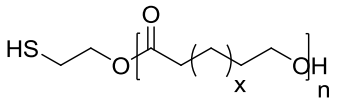
Sample Name: α–Thiol–ω–Hydroxy–terminated Poly(ε–caprolactone-co-δ-valerolactone)

Sample #: P20111-CLVLran-OHSH



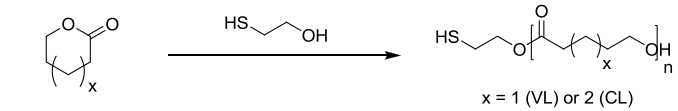
x = 1 (VL) or 2 (CL)

Composition:

$M_n \times 10^3$ HS–PCL-co-PVL	PDI
3.0 (NMR), 3.0 (SEC)	1.2
SH functionality	>90% (NMR)
CL : VL = 1.1 : 1	

Synthetic Procedure:

HS–P(CL-co-VL) is prepared by ring–opening co-polymerization of ε–caprolactone and δ–valerolactone using mercaptoethanol as an initiator. The scheme of the reaction is illustrated below:



x = 1 (VL) or 2 (CL) x = 1 (VL) or 2 (CL)

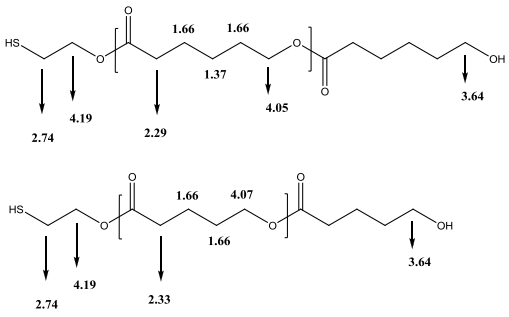
Solubility:

P(CL-co-VL) is soluble in $CHCl_3$, Acetone, THF, insoluble in methanol, ethanol. Precipitated from Acetone or $CHCl_3$ into hexane/EtOH or ether/EtOH.

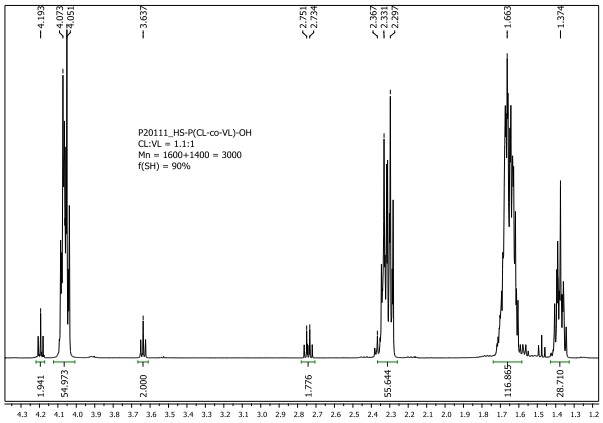
Characterization:

P(CL-co-VL) bearing free thiol end was analyzed by size exclusion chromatography (SEC) to obtain the polydispersity index (PDI). M_n was estimated by NMR. Percentage of thiol functionality was determined from the integrals ratio of the peaks at 3.64 and 2.74 ppm.

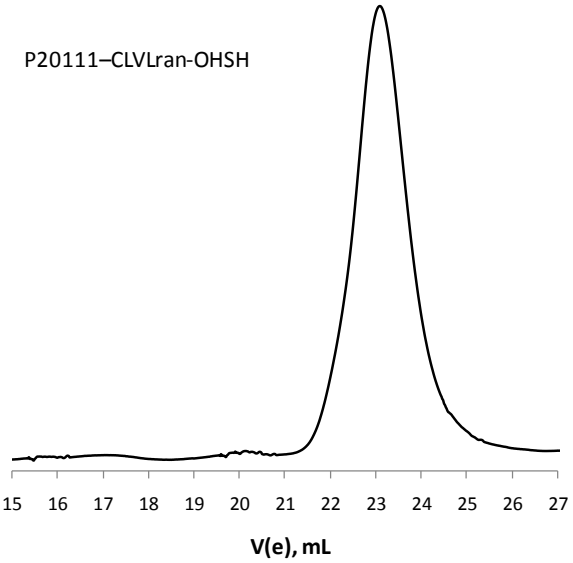
Chemical shifts assignments



P(CL-co-VL) with free Thiol End group



SEC of the polymer:



N.B.: Certain broadening of the elugram might be due to the strong interaction of SH–group with the column packing material

DSC of P20111–CLVLran-OHSH:

T_g = –65 °C

T_m = 28 °C