

Nicola Marheineke

Viscotek Europe limited

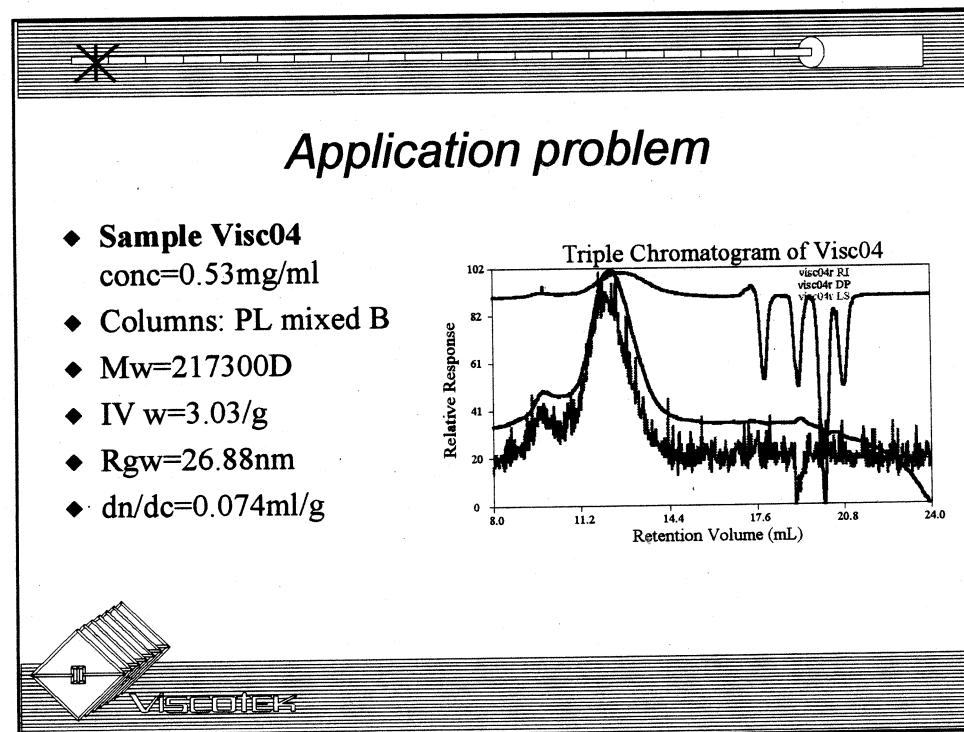
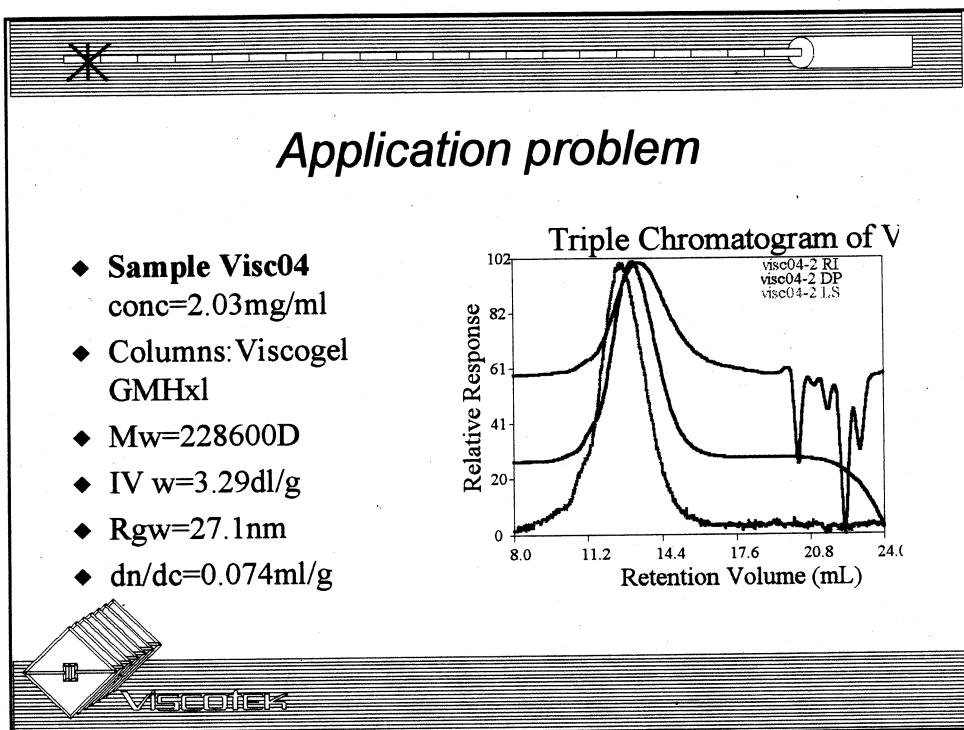
Nitrocellulose Measured by GPC

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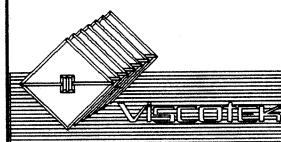
Chromatography and Calibration

Mobile Phase:	THF stabilised with 0.025% BHT (butylated hydroxytoluene)
Flow Rate:	1 ml/min.
Inj. Volume:	100 µl
Concentrations:	0.5-2 mg/ml (samples were for 7days in solution)
dn/dc values:	0.074 ml/g
Column Set:	2x Plimixed B, Viscogel GMHXL
Samples:	AWE Nitrocellulose (11.7-12.7%N)
Standards:	Polystyrene



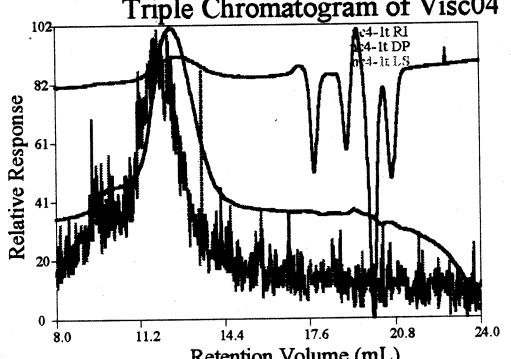
**Conventional , Universal and Triple
Detection results**

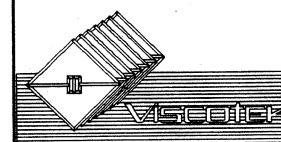
	Conventional Calibration	Universal calibration	Triple Detection
File name	NC4-1	NC4-luc	NC4-1t
Mw(D)	756200	518500	575700
IVw(d/g)	/	3.82	3.85
Rgw(nm)	/	17.6	38.7
Dn/dc (ml/g)	0.074	0.074	0.074
Conc. (mg/ml)	0.53 (rec.60%)	0.53	0.53


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Application problem

- ◆ **Sample Visc04**
conc=0.53mg/ml
- ◆ Columns: PL mixed B
- ◆ Mw=575700D
- ◆ IV w=3.85/g
- ◆ Rgw=38.71nm
- ◆ dn/dc=0.074ml/g
- ◆ after DMF injection

Triple Chromatogram of Visc04



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Application problem

- ◆ Viscosity very high up to 3-4 dl/g
- ◆ fronting/tailing on Viscosity peak
- ◆ column overload
- ◆ LS shows material not properly in solution
- ◆ RI signal low
- ◆ viscometer signal shows smaller pre-peak after treating the columns with DMF

Visco4 shows column interaction

Response (mV)

Retention Volume (mL)

Types of non-size exclusion effects

- ◆ Intermolecular electrostatic interactions between solute and packing (ion exclusion)
- ◆ Intramolecular electrostatic interactions
- ◆ adsorption (hydrophobic interactions between solute and packing)

