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Evaluation of single-point equations to determine intrinsic viscosity of sodium alginate and chitosan with high deacetylation degree

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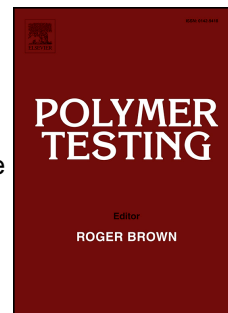
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1 **Evaluation of Single-point equations to determine intrinsic viscosity of sodium**
2 **alginate and chitosan with high deacetylation degree**

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19 **ABSTRACT**

20 A viscometric study of two polyelectrolytes, chitosan (CH, with 94% deacetylation
21 degree, in a solute-mixture of acetic acid (0.1 mol L⁻¹) and sodium chloride (0.2 mol L⁻¹)
22 and sodium alginate (SA, with 62% M-units, in sodium chloride (0.1 mol L⁻¹), was
23 performed at 25 °C. Five different equations were applied to calculate intrinsic viscosity
24 [η]: Huggins, Kraemer and Schulz-Blaschke (SB) by graphical extrapolation; Solomon-
25 Ciuta, Deb-Chanterjee and again SB, by faster single-point determination. Viscometric
26 constants were calculated employing graphical extrapolation equations. Average molar
27 mass (\bar{M}_v) values were determined by applying the Mark-Houwink-Sakurada equation.
28 For the samples analyzed, Huggins equation was the most suitable to calculate [η] and \bar{M}_v
29 by graphical extrapolation for chitosan, while Schulz-Blaschke and Solomon-Ciuta were
30 adequate for single-point determinations of sodium alginate. Viscometric constants
31 indicated that the aqueous mixture of acetic acid and sodium chloride is a poor solvent for
32 chitosan, while sodium alginate is well solvated by aqueous sodium chloride.

33 **Keywords:** intrinsic viscosity; sodium alginate; chitosan; single-point equations; average
34 molar mass

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