

Supplementary Material (ESI) for Green Chemistry
This journal is © The Royal Society of Chemistry xxxx

Supplementary Material for “Facile Enhancement of Deacetylation Degree of Chitosan by Hydrothermal Treatment in Imidazolium-Based Ionic Liquid”

Daisuke Ishii^{*a}, Chikara Ohashi^b and Hisao Hayashi^b

^a 1-1-1 Yayoi, Bunkyo-ku, Tokyo, Japan. Fax: 81 3 5841 1304; Tel: 81 3 5841 5267

^b 1-5 Yokotani Seta Oe-cho, Otsu, Shiga, Japan. Fax: 81 77 543 7483; Tel: 81 77 543 7463

*To whom correspondence should be addressed. E-mail: adishii@mail.ecc.u-tokyo.ac.jp

List of Contents for Supplementary Material:

1. Experimental Section

2. Steady flow behaviour and shear viscosity of 1 % (w/w) chitosan in BMIMOAc

Figure S1: Double logarithmic plot of shear stress and viscosity of 1 % (w/w) chitosan in BMIMOAc against shear rate

1. Experimental Section

Commercially available chitosan (Chitosan 50, Wako Pure Chemicals, Japan) was used as a starting material. 1-butyl-3-methylimidazolium acetate (BMIMOAc) was purchased from manufacturer (Aldrich Co. Ltd., Milwaukee, US) and used as received. Dissolution of chitosan in BMIMOAc was performed by heating 1 % (w/w) chitosan dispersion in BMIMOAc at 100 °C under vacuum (ca. 2 kPa).

Viscosity measurement was performed at 20 °C by using a Haake RS6000 stress-controlled rheometer equipped with cone-plate sensor with the diameter of 6 cm and cone angle of 1°.

2. Steady flow behaviour and shear viscosity of 1 % (w/w) chitosan in BMIMOAc

Figure S1 shows shear rate dependence of shear stress and viscosity of 1 % (w/w) chitosan dispersion in BMIMOAc. The dispersion showed almost constant viscosity of 8.7 Pa s up to the shear rate of 0.3 s⁻¹. Above that shear rate, viscosity of the dispersion decreased with increasing shear rate. The constant viscosity, i.e., Newtonian flow behavior, at relatively low shear rates and shear thinning phenomenon at relatively high shear rates is common in molecularly dispersed polymer solutions with relatively high polymer consistency.

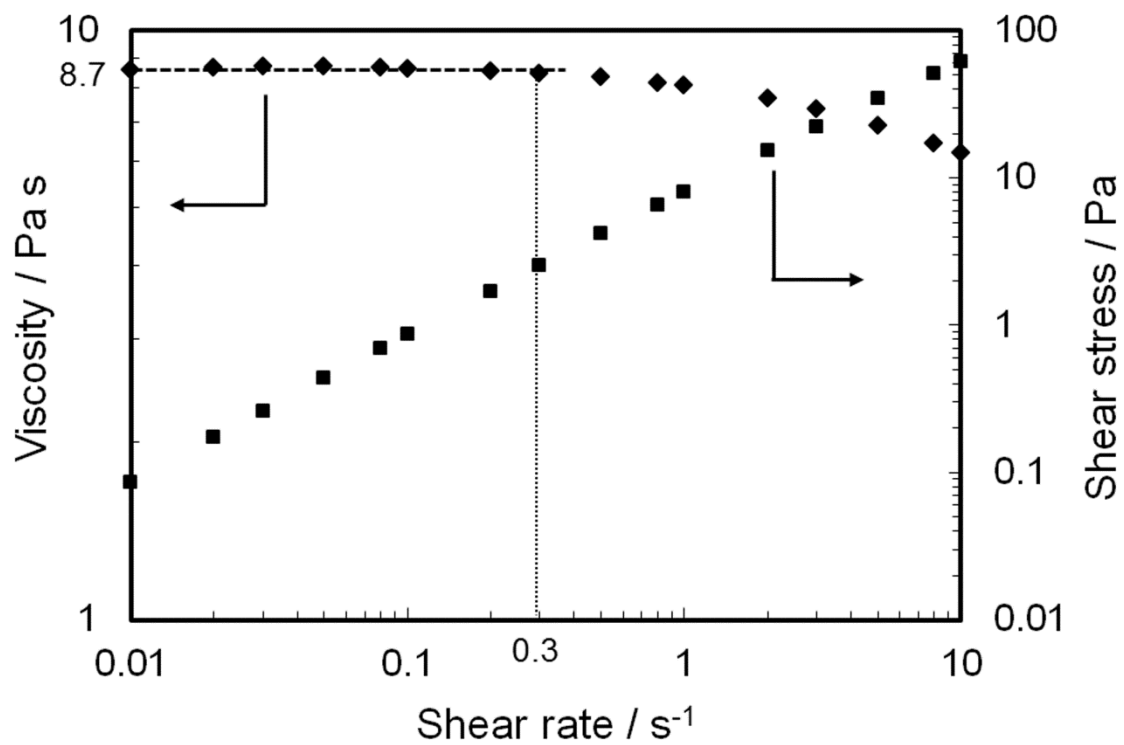


Figure S1. Double logarithmic plot of shear stress and viscosity of 1 % (w/w) chitosan in BMIMOAc against shear rate.