

Flow behaviour of sago starch-g-poly(acrylic acid) in distilled water and NaOH—effect of photografting

Abstract

Flow behaviour study of UV initiated sago starch-g-poly(acrylic acid) (AA) was carried out to elucidate the effect of UV irradiation and photografting on native sago starch. The flow behaviour of native and treated sago starch in different gelatinizing agent (distilled water and NaOH) was also investigated. All starch samples exhibited pseudoplastic characteristic and fitting to Herschel–Bulkley model. Flow behaviour of all samples were highly dependent on the UV treatment, degree of grafting and type of gelatinizing solvent, whereby the volume fraction of the granules varies in accordance with the swelling capacities as well as resistances to rupture. As a result, control sample imparted highest viscosity when distilled water was used as solvent; on the other hand, 20 AA imparted highest viscosity when NaOH was used as solvent. Swollen granule fractions affect the viscosity magnitude of the flow behaviour of a starch sample as evident by photomicrographs.