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ACCEPTED MANUSCRIPT

1	Synthesis of alginate derivative via the Ugi reaction and its characterization
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10	Highlights
11	The supplicities of instandard (U.S. Ale) and another the U.S. for a supersonal size the U.S.
12	• The amphiphine alginate derivative (Ugi-Alg) was prepared via the Ugi four-component
13	reaction.
14	• The crystal structure change occurred during the synthesis of Ugi-Alg.
15	• Ugi-Alg displays higher thermal stability in comparison with pristine alginate.
16	• Ugi-Alg exhibits good amphiphilic functionality similar to the classic surfactant.
17	• Ugi-Alg could form stable self-aggregated micelle in the aqueous media.
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21	Abstract: In this research, the systematic evaluation of fundamental properties of the alginate
22	derivative (Ugi-Alg) synthesized by the Ugi reaction is presented. The structure of Ugi-Alg with the
23	degree of substitution of 23.24% was confirmed by FT-IR and ¹ H NMR spectrometers. The X-ray
24	diffraction (XRD) results indicate the amorphous structure and the crystal structure change of Ugi-Alg,
25	which is possibly ascribed to the destruction of inter- and intra-molecular hydrogen bonding
26	interactions during the Ugi reaction. From thermal gravimetric analysis (TGA) and fluorescence
27	spectrophotometer, Ugi-Alg shows high thermal stability and good amphiphilic functionality with the
28	critical aggregation concentration of 0.07 g/L in 0.15 mol/L aqueous NaCl solution. Transmission electron
29	microscope (TEM) image and dynamic light scattering (DLS) reveal that stable Ugi-Alg self-aggregated
30	micelle with the average size of 162.3 nm and ζ potential at about -31.7 mV could form in the aqueous

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