Novel tunable adsorbents based on Bentonite and modified Tragacanth gum for removal of acid dyes from aqueous solutions

Susan Sadeghi*1, a, Ali Zeraatkar Moghadam a, Mohammad Massinaei b

Department of Chemistry, Faculty of Science, University of Birjand, Birjand, Iran
Department of Mineral Engineering, Faculty of Engineering, University of Birjand, Birjand, Iran

*Corresponding Author (S. Sadeghi). Tel.: +98 56 32202008; Fax: +98 56 32202009.
E-mail address: ssadeghi@birjand.ac.ir
**Fig. S1** FTIR spectrum of the TG (a), TG-g-P(MMA) (b), B (c), TG-g-P(MMA)/B (d), and CR loaded TG-g-P(MMA)/B (e).

**Fig. S2** Thermal gravimetric analysis (TGA) and differential thermal analysis (DTA) of TG (a), TG-g-PMMA(b), and TG-g-P(MMA)/B(c).

**Fig. S3** SEM of B (a) and TG-g-P(MMA)/B (b).

**Fig. S4** Normal probability plot of studentized residuals for the defined quadratic models of (a) CR, (b) MO, and (c) AB-113.

**Fig. S5** Typical interactions between the CR dye with (a) TG, (b) B and (c) TG-g-P(MMA).
Figure S1

(a)

(b)

(c)

(d)

(e)

Transmittance %

Wavenumber (cm$^{-1}$)
Figure S2

(a) TGA and DTA curves showing weight loss and thermal effects at different temperatures.

(b) Another set of TGA and DTA curves with similar temperature profiles.

(c) Additional TGA and DTA data, possibly depicting a different material or condition.
Figure S3
Figure S4

(a)

(b)

(c)
Figure S5

(a) \( n \) = \( \pi \pi \) stacking

(b) \( = \) Si, Al, Mg, Fe

(c) = H-bonding between TG-g-P(MMA) and B and CR

= Covalent bond between TG-g-P(MMA) and CR

= Ionic interaction between TG-z-P(MMA) and CR