The adsorption capacity and % removal was calculated using following equations.

$$q_e = (C_0 - C_e)V / m \quad \ldots\ldots\ldots\ldots\ (1)$$

where C_o and C_e (mg/L) are the initial and equilibrium concentrations of dyes, respectively; V (L) is the volume of the solution; and m (g) is the synthesized materials.

$$\mathrm{R}\ (\%) = (C_0 - C / C_0)\ X\ 100 \ldots\ldots\ldots\ldots\ldots(2)$$

where C_0 is the initial concentration of dye, C is the equilibrium concentration, V is the volume of the solution, m is the mass of adsorbate.

By applying pseudo-first-order (PFO) along with pseudo-second-order (PSO) models, the kinetic behaviour of RR-195 sorption onto the Fe_3O_4-adn-(1,3,5-triazine-2,4,6-triyl)triproline nanocomposite was examined (Fig. 13). Eqs. (3) and (4), correspondingly, are the linear equations for PFO and PSO, and Table 1 provides a summary of the fitting parameters.

$$\log\ (q_e - q_t) = \log\ q_e - \frac{k_1}{2.303} \cdot t \qquad \ldots (3)$$

$$\frac{t}{q_t} = \frac{1}{(k_2 \cdot q_e^2)} + \frac{1}{q_e} t \qquad \ldots (4)$$

The Langmuir isotherm model, which assumes monolayer adsorption on a homogeneous surface with a finite number of energetically equivalent adsorption sites, is expressed as:

$$q_e = \frac{q_{max} K_L C_e}{1 + K_L C_e} \ldots\ldots\ldots\ldots\ldots(5)$$

where q_e (mgg^{-1}) is the equilibrium adsorption capacity, q_{max} ((mgg^{-1})) is the maximum monolayer adsorption capacity, K_1 (L mg^{-1}) is the Langmuir constant related to adsorption affinity, and C_e (mg L^{-1}) is the equilibrium dye concentration.

The Freundlich isotherm model, applicable to heterogeneous surfaces and multilayer adsorption, is expressed as:

$$q_e = K_F C_e^{1/n} \ldots\ldots\ldots\ldots\ldots(6)$$

where K_f is the Freundlich adsorption constant and 1/n represents adsorption intensity.