**Table S1**.The general characteristics of RB19 dye



Chemical structure

Molecular formula C22H16N2Na2O11S3

C.I. number 61200

C.I. name Asit mavi 145

Chemical class Anyonik

Ionization Asidik

Dye content (%) 50

Molecular weight (g/mol) 626.54

λmax (nm) 593

**Table S2**. Comparison of maximum sorption capacity of various sorbents for RB19 removal

**Sorbents qm (mg/g) References**

Graphene oxide modified with polystyrene 39.07 Azizi et al. (2019)

**Basic bismuth nitrate (BBN-EtOH) 1344.99 Najdanović et al. (2019)**

**Basic bismuth nitrate 1049.19 Najdanović et al. (2020)**

**Triple-metal nano sorbent (FeCuNi-280) 470.01 Kostić et al. (2018)**

L-arginine-functionalized Fe3O4 nanoparticles 125.00 Dalvand et al. (2016)

Magnetite nanoparticles loaded tea waste 87.72 Madrakian et al. (2012)

Corn silk 71.60 Değermenci et al. (2019)

Wheat Bran 117.60 Çiçek et al. (2007)

*Citrus sinensis* biosorbent 37.45 Asgher and Bhatti (2012)

Rice straw fly ash 38.24 El-Bindary et al. (2016)

Sludge-rice husk biochar 38.46 Chen et al. (2019)

Green seaweed biochar 161.83 Gokulan et al. (2019)

Coconut shell activated carbon 2.78 Isah et al. (2015)

Alumina/carbon nanotube hybrid 3.75 Malakootian et al. (2015)

γ-Fe2O3/cross-linked chitosan 29.37 Zhua et al. (2010)

MgO nanoparticles 166.70 Moussavi and Mahmoudi (2009)

Chitosan/SiO2/carbon nanocomposite 97.08 Abbasiet al. (2017)

TW 38.76 This study

MTW 58.14 This study

**Table S3.** The intra-particle diffusion constants for the adsorption at different initial concentrations of RB19 onto TW and MTW

Ci **kid,1  I1 R2 ∆q(%)**  **kid,2  I2 R2 ∆q(%) kid,3  I3 R2 ∆q(%)**

**TW**

100 **1.06 7.07 0.8754 9.04** 0.30 6.47 0.9685 **7.59 0.41 8.83 0.9113 12.16**

150 **1.03 8.88 0.9034 7.15** 0.55 7.63 0.9944 **6.17 0.45 10.01 0.8775 10.43**

 200 **1.01 9.54 0.9218 6.93** 0.62 9.45 0.9948 **5.24 0.52 11.67 0.8919 9.46**

300 **0.98 12.44 0.9155 5.88** 0.86 11.30 0.9969 **4.11 0.73 13.01 0.8517 6.14**

**MTW**

100 **1.04 5.59 0.8974 6.25** 0.31 4.95 0.9978 **5.41 0.38 7.99 0.9123 8.14**

150 **1.00 7.97 0.9292 4.43** 0.42 5.22 0.9905 **3.55 0.50 11.34**  **0.8893 7.86**

 200 **0.97 12.62 0.9311 4.04** 0.61 9.45 0.9517 **3.30 0.57 16.04 0.8812 5.14**

300 **0.96 19.34 0.9412 3.99** 0.69 23.57 0.9781 **2.87 0.62 19.53 0.9120 4.77**

**\***Ci: mg/L; kid:mg/gmin; I: mg/g



**Figure S1.** XRD pattern of MTW



**Figure S2.** Nitrogen sorption-desorption isotherms and pore size distribution (inset) of MTW



**Figure S3.** Effect of ionic strength on the sorption of RB19 dye onto TW and MTW



**Figure S4. Linear plots of pseudo-first-order (a, c) and pseudo-second-order (b, d) kinetic models at various concentrations for RB19 adsorption onto TW and MTW.**



**Figure S5.** Intra-particle diffusion plots for RB19 dye sorption at various concentrations onto TW (a) and MTW (b)



**Figure S6. Linear plots of Freundlich (a, c) and Langmuir isotherm (b, d) models at various temperatures for RB19 adsorption onto TW and MTW.**

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