Electronic Supplementary Material (ESI) for RSC Advances.

New lignin-based polyurethane foam for wastewater treatment

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Table S1 TGA and DTG comparison of lignin and LPUF

Polymer	**TGA**				**DTG**		
	Decomposition Temperature (°C)						
	$T_{10\%}$	**$T_{25\%}$**	**$T_{50\%}$**	**$T_{100\%}$**	**T_{1stD}**	**T_{2ndD}**	**T_{3rdD}**
Lignin	210	272	368	600	245	314	500
LPUF	220	310	515	700	242	320	565

Table S2 Parameters of different kinetic models for MG removal by LPUF

Kinetic Model	Parameter	
Pseudo-first-order	k_1	3.67×10^{-2}
	q_e	58.38
	R^2	0.911
Pseudo-second-order	k_2	4.4×10^{-4}
	q_e	46.59
	R^2	0.987
Elovich model	α	2.08
	β	0.103
	R^2	0.969
Intra-particle diffusion	C_i	0.846
	k_i	2.77
	R^2	0.912

Table S3 Thermodynamic parameters for MG removal by LPUF

	ΔG° (kJ/mol)					**ΔH°** (kJ/mol)	**ΔS°** (J/mol K)
T(K)	298	308	318	328	338		
	-2.36	-2.97	-3.90	-3.61	-3.55	6.82	31.77

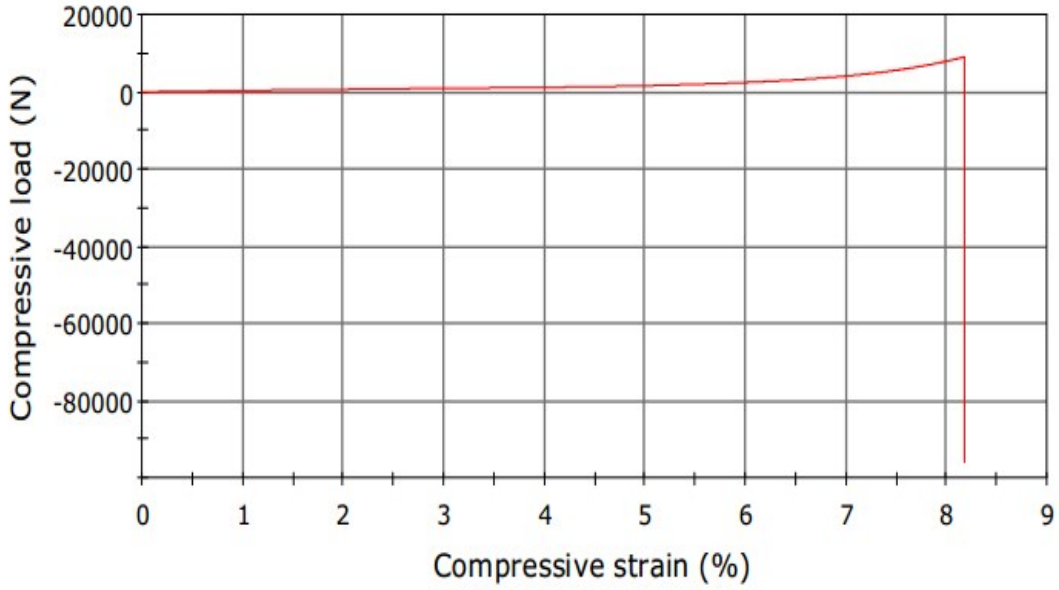

Fig. S1 Compressive load versus compression strain curve for LPUF.

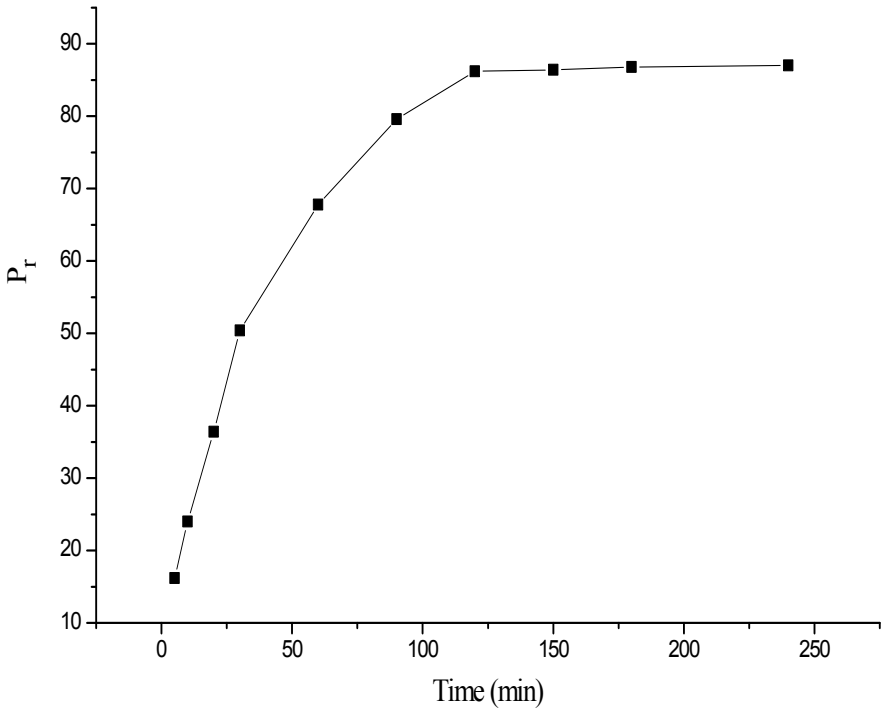

Fig. S2 %Removal of MG by reference foam (CNW-PUF) with time.

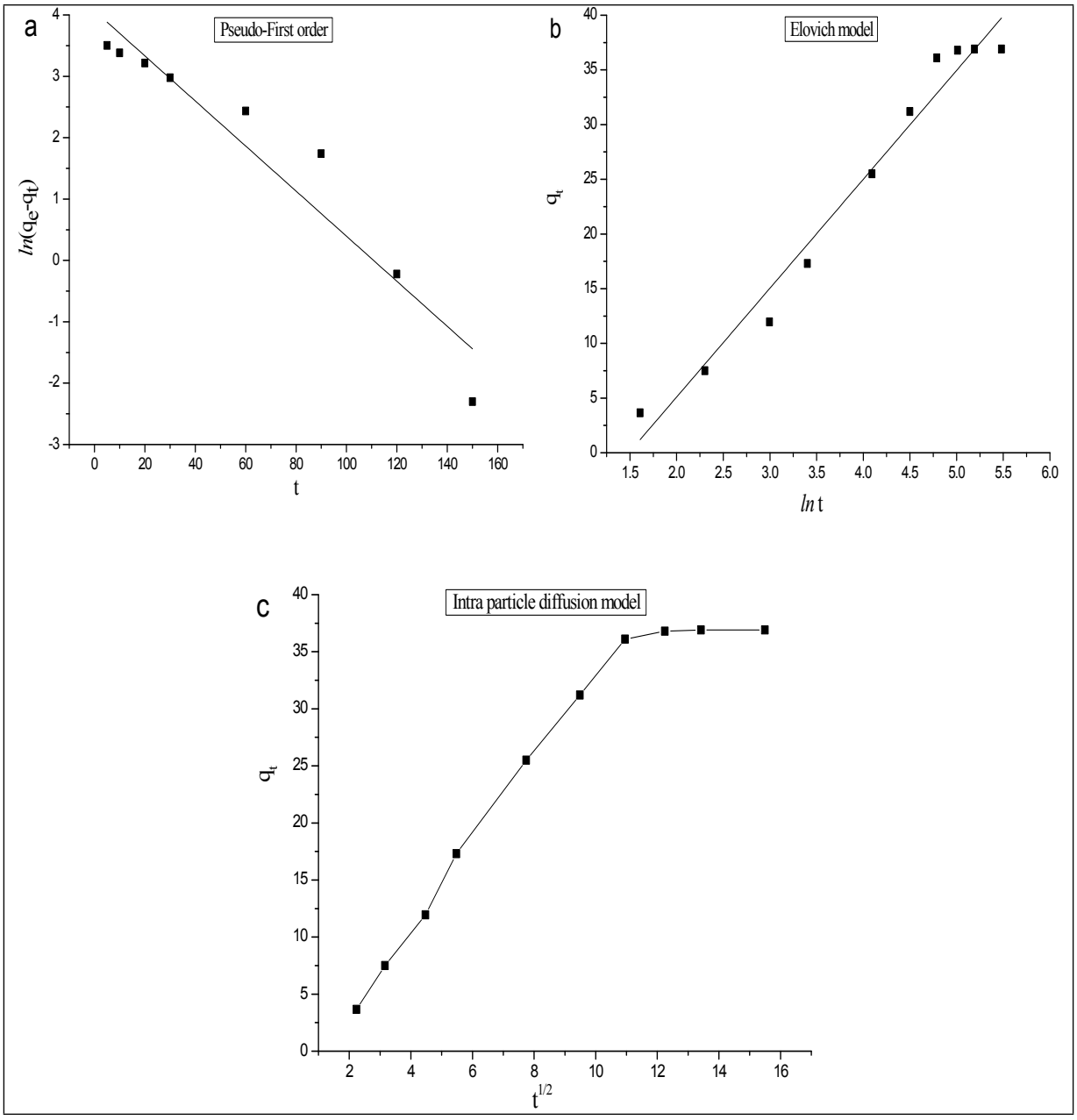

Fig. S3 Pseudo-first order kinetic plot (a), Elovich model (b) and Intra-particle diffusion model (c) for MG adsorption on LPUF.

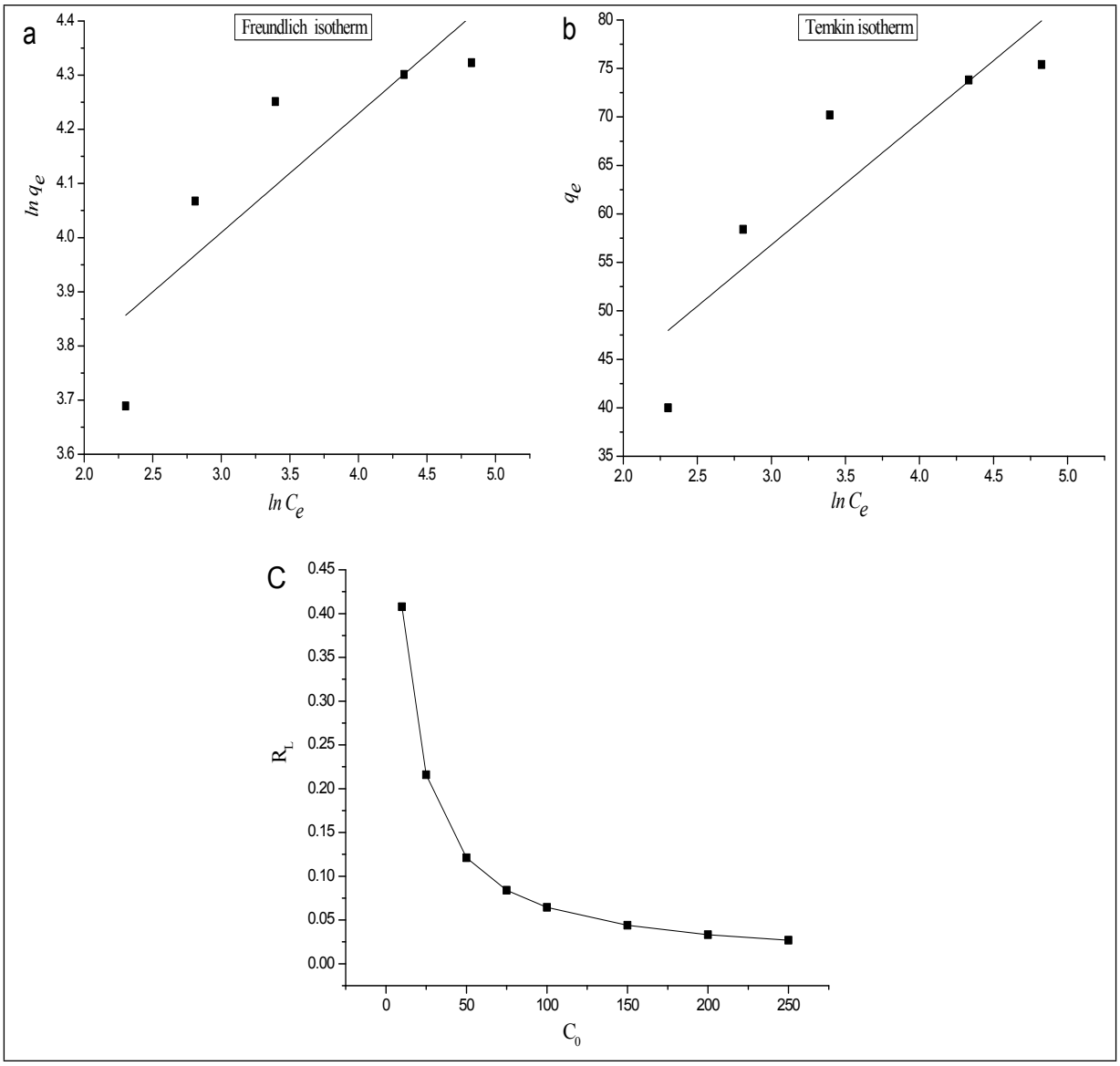

Fig. S4 Freundlich isotherm (a), Temkin isotherm (b) and plot of R_L with initial concentration (c) for MG adsorption onto LPUF.