Title page

Effect of colloidal particle size on physicochemical properties and aggregation behaviors of two alkaline soils

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Table S1 Centrifugation time and speed for extraction of soil colloidal particles

Particle diameter	Centrifugation speed ($r \cdot min^{-1}$)	Centrifugation time (min)
$d < 2$ μm	600	6.28
$d < 1$ μm	1200	6.28
$d < 100$ nm	9500	10.03

Table S2 The oxygen functions of Lou soil and cinnamon soil colloids

Soil colloids	Particle diameter	Contents of carbon-containing organic functional groups (%)				Photoelectron spectra peak area of organic functional groups containing carbon (XPS. eV)			
		C–C C–H C=C	C–O	C=O	COO-	C–C C–H C=C	C–O	C=O	COO-
Lou soil colloids	$d < 2$ μm	67.99	21.06	0	10.95	51785	16160	0	8398
	$d < 1$ μm	77.80	13.00	2.65	6.55	57865	9668	1968	4880
	$d < 100$ nm	79.07	2.11	18.82	0	128893	3433	30595	0
cinnamon soil colloids	$d < 2$ μm	94.75	0	0	5.25	96519	0	0	5335
	$d < 1$ μm	95.09	0	2.84	2.07	90071	0	2687	1945
	$d < 100$ nm	79.80	10.67	0	9.53	117936	15743	0	14043

Table S3 The concentrations of soluble cations in soil colloidal suspension

Soil colloids	Particle diameter	K^+ ($mmol \cdot L^{-1}$)	Na^+ ($mmol \cdot L^{-1}$)	Ca^{2+} ($mmol \cdot L^{-1}$)	Mg^{2+} ($mmol \cdot L^{-1}$)
Lou soil colloids	< 2 μm	0.110	0.149	0.106	0.030
	< 1 μm	0.103	0.185	0.054	0.010
	< 100 nm	0.079	0.045	0.060	0.010
cinnamon soil colloids	< 2 μm	0.091	0.110	0.183	0.027
	< 1 μm	0.084	0.157	0.079	0.006
	< 100 nm	0.081	0.107	0.090	0.005

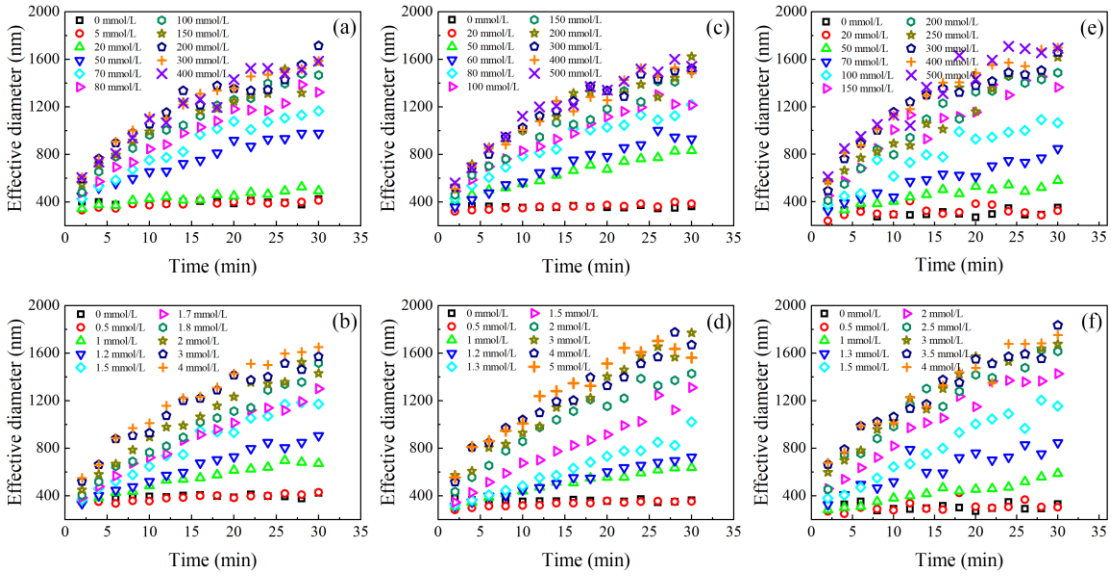

Fig. S1 The aggregation kinetic curves of Lou soil colloids in NaCl and $CaCl_2$ solutions, (a). $d < 2$ μm in NaCl, (b). $d < 2$ μm in $CaCl_2$, (c). $d < 1$ μm in NaCl, (d). $d < 1$ μm in $CaCl_2$, (e). $d < 100$ nm in NaCl, (f). $d < 100$ nm in $CaCl_2$.

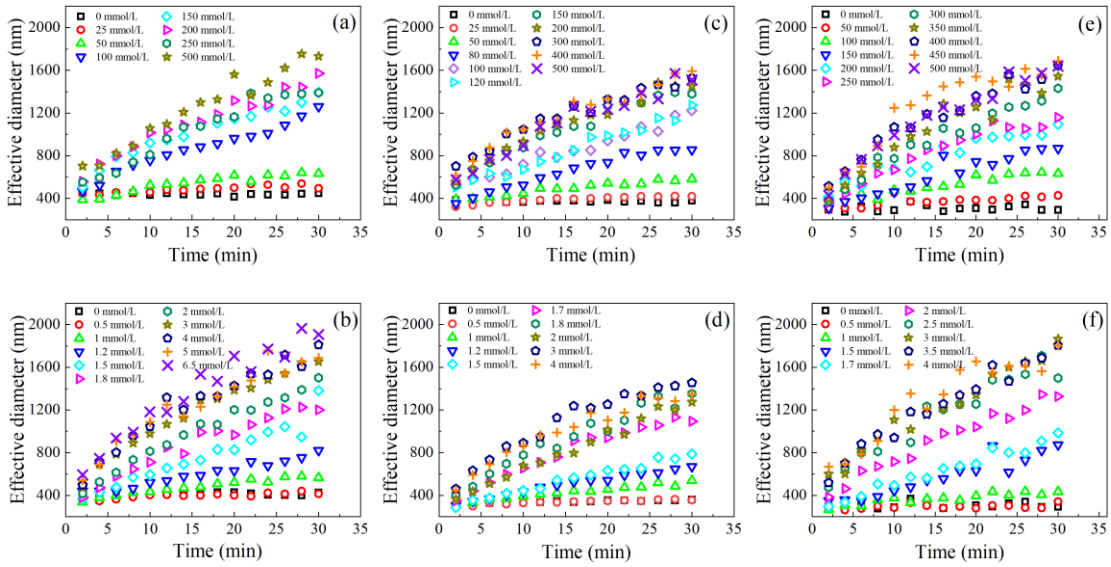

Fig. S2 The aggregation kinetic curves of cinnamon soil colloids in NaCl and $CaCl_2$ solutions, (a). $d < 2$ μm in NaCl, (b). $d < 2$ μm in $CaCl_2$, (c). $d < 1$ μm in NaCl, (d). $d < 1$ μm in $CaCl_2$, (e). $d < 100$ nm in NaCl, (f). $d < 100$ nm in $CaCl_2$.