

Table S1 Prediction results of PLSR and SVR based on characteristic wavelengths

Spectra	Model	Mechanical parameter	Number	Parameter	Model set		Prediction set			
					RMSEC	R ² C	RMSEP	R ² P	RPD	
R	SNV-	DA(mm ²)	60	6	91.675	0.827	100.784	0.788	2.175	
	UVE-	AE(J)	55	11	1.308	0.704	1.404	0.658	1.577	
	PLSR	MF(N)	51	8	66.752	0.802	66.374	0.800	2.214	
	Raw-	DA(mm ²)	35	8	68.233	0.904	87.849	0.841	2.540	
	CARS	AE(J)	14	8	1.316	0.694	1.362	0.693	1.435	
	-PLSR	MF(N)	28	10	48.449	0.896	54.825	0.862	2.675	
	Raw-	DA(mm ²)	106	7	86.824	0.844	92.415	0.824	2.504	
	UVE-	AE(J)	75	13	1.227	0.733	1.386	0.682	1.582	
	PLSR	MF(N)	75	12	57.698	0.853	59.025	0.840	2.462	
	SNV-	DA(mm ²)	21	(100,0.1,0.01)	60.964	0.839	101.174	0.789	2.022	
	CARS	AE(J)	9	(100,0.1,0.1)	1.292	0.728	1.323	0.699	1.422	
	-SVR	MF(N)	28	(100,0.1,0.1)	38.236	0.937	61.489	0.838	2.185	
	Raw-	DA(mm ²)	35	(100,0.1,0.1)	61.840	0.923	97.121	0.816	2.238	
	CARS	AE(J)	14	(100,0.1,0.1)	1.287	0.717	1.378	0.671	1.465	
	-SVR	MF(N)	28	(100,0.1,0.1)	56.747	0.860	61.679	0.845	2.350	
	Raw-	DA(mm ²)	106	(100,0.1,0.01)	84.342	0.854	97.959	0.814	2.198	
	UVE-	AE(J)	75	(10,0.1,0.1)	0.726	1.275	0.603	1.561	1.067	
	SVR	MF(N)	75	(10,0.1,0.1)	60.964	0.839	79.770	0.721	1.788	
	A	Raw-	DA(mm ²)	75	8	85.551	0.849	97.289	0.804	2.313
		UVE-	AE(J)	96	14	1.228	0.733	1.347	0.701	1.652
PLSR		MF(N)	73	8	68.792	0.790	70.113	0.774	2.023	
Raw-		DA(mm ²)	75	(100,0.1,0.01)	96.787	0.807	105.552	0.777	1.996	
UVE-		AE(J)	96	(100,0.1,0.01)	1.434	0.645	1.645	0.556	1.173	
SVR		MF(N)	73	(10,0.1,0.1)	67.263	0.803	75.777	0.744	1.840	
GF-		DA(mm ²)	76	7	98.912	0.801	98.190	0.793	2.227	
UVE-		AE(J)	82	12	1.505	0.635	1.363	0.628	1.290	
PLSR		MF(N)	117	13	67.843	0.795	70.405	0.776	1.973	
K-M		Raw-	DA(mm ²)	33	7	82.444	0.862	87.984	0.835	2.362
	CARS	AE(J)	18	10	1.381	0.692	1.087	0.762	1.705	
	-PLSR	MF(N)	38	13	56.251	0.859	57.483	0.850	2.450	
	Raw-	DA(mm ²)	98	11	80.500	0.868	88.463	0.833	2.486	
	UVE-	AE(J)	68	13	1.382	0.692	1.257	0.682	1.513	
	PLSR	MF(N)	114	14	63.665	0.819	65.240	0.807	2.099	
GF-	DA(mm ²)	36	(100,0.1,0.1)	86.872	0.849	112.473	0.737	1.665		

CARS	AE(J)	38	(100,0.1,0.1)	1.114	0.810	1.400	0.772	1.142
-SVR	MF(N)	35	(10,0.1,0.1)	77.844	0.731	87.281	0.677	1.324
GF-	DA(mm2)	76	(10,0.1,0.1)	103.159	0.786	113.718	0.734	1.608
UVE-	AE(J)	82	(10,0.1,0.1)	1.470	0.684	1.278	0.679	1.200
SVR	MF(N)	117	(100,0.1,0.1)	59.819	0.842	82.650	0.695	1.591
Raw-	DA(mm2)	33	(100,0.1,0.1)	80.482	0.871	109.144	0.760	1.863
CARS	AE(J)	18	(100,0.1,0.1)	1.470	0.684	1.278	0.679	1.200
-SVR	MF(N)	38	(100,0.1,0.1)	0.842	59.819	82.650	0.695	1.591

Spectra: Three kinds of spectra of R, A, and K-M; Number: Number of characteristic wavelengths;