Supplementary material

Table S1. Statistical results of characteristic wavelength extraction.

Method	Partition method	Number	Calibration set			Prediction set		
			R_c^2	RMSE	SE	R_p^2	RMSE	SE
PLSR	UVE	20	0.686	0.104	0.105	0.750	0.114	0.114
	VCPA	11	0.794	0.085	0.085	0.840	0.092	0.093
	CARS	17	0.792	0.085	0.086	0.820	0.094	0.095
	iVISSA	45	0.837	0.076	0.076	0.840	0.089	0.090
	IRIV	52	0.830	0.078	0.078	0.849	0.087	0.088

Table S2. Bayes-CNN-BI-LSTM model training parameters.

Hyperparameter name		Model
		Bayes-CNN-Bi-LSTM
CNN	L2 Regularization	0.001
	Kernel	1x3
	Dropout Layer	0.1
	Learn Rate Drop Factor	0.6
	Num Of Units	128
Bayes	Hidden layer	32
	Initial Learn Rate	0.05

Table S3. LSTM model training parameters.

Hyperparameter name	Model			
	LSTM	Bi-LSTM	CNN-Bi-LSTM	bayes-CNN-Bi-LSTM
Units	128	128	128	128
Mini BatchSize	16	16	32	32
Max Epochs	500	500	500	500
Learningrate	0.001	0.0009	0.01	0.01
Learn Rate Drop Period	100	100	50	50
L2 Regularization	0.001	0.001	0.0015	0.0015