## Regression Coefficient Example

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```
clearvars
load pnnl_napalm_data
```

Compute the regression coefficient matrices, *B*, for Classical Least Squares (CLS), Principal Component Regression (PCR), and Partial Least Squares (PLS).

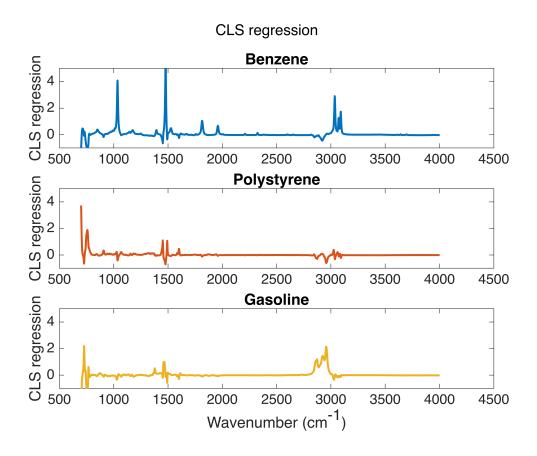
For PCR, use 3 principal components.

For PLS, use 3 latent variables.

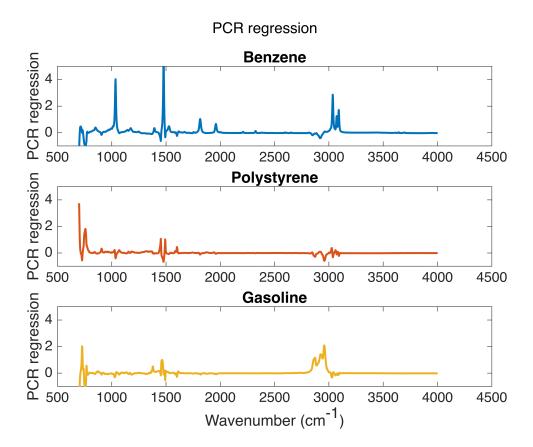
```
[C_pls, B_pls] = pnnl_pls(A_train, C_train, A_unknown, 3);
```

Plot regression coeffcients for CLS.

plot\_regression\_coefficients(B\_cls,'CLS regression',Wavenumbers,WavenumberLabel,Consti



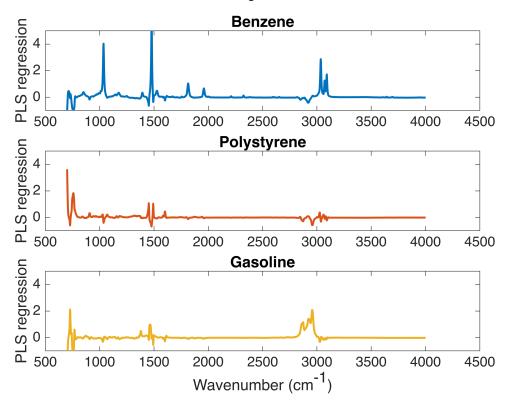
plot\_regression\_coefficients(B\_pcr, 'PCR regression', Wavenumbers, WavenumberLabel, Consti



Plot regression coeffcients for PLS.

plot\_regression\_coefficients(B\_pls,'PLS regression',Wavenumbers,WavenumberLabel,Consti

## PLS regression



```
function plot_regression_coefficients(B,y_label,Wavenumbers,WavenumberLabel,Constituen
    figure
    n = size(B,2);
    colorOrder = pnnl colorOrder(n);
    figure;
    h = gobjects(1,n);
    for j = 1:n
        h(j) = subplot(n,1,j);
        plot(Wavenumbers,B(:,j),'LineWidth',2,'Color',colorOrder(j,:));
        title(ConstituentNames{j})
        ylabel(y_label)
    end
    sgtitle(y_label)
    linkaxes(h)
    xlabel(WavenumberLabel)
    set(h, 'FontSize', 14, 'YLim', [-1 5]);
end
```

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