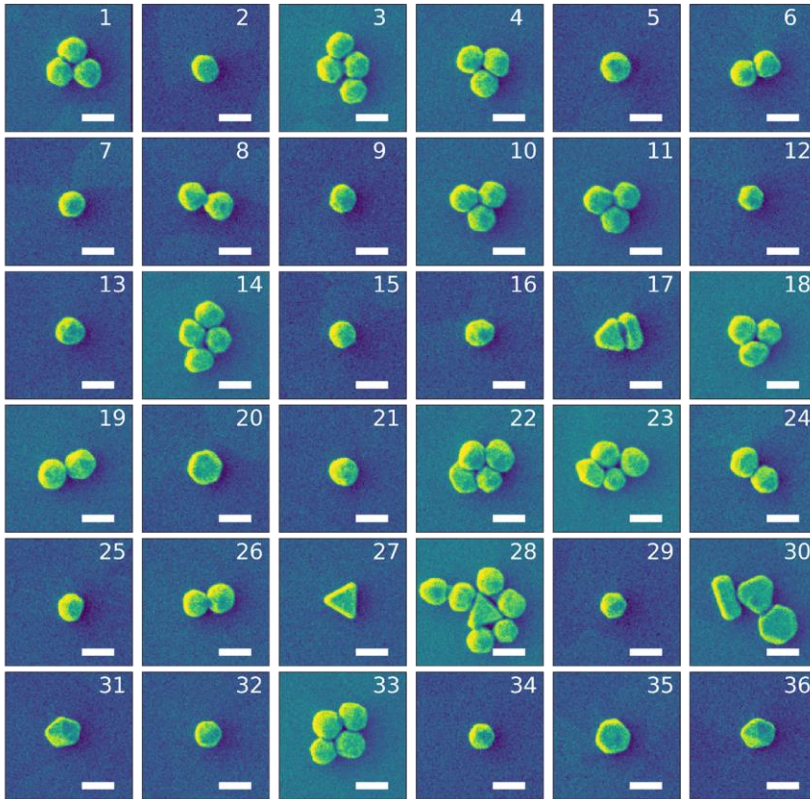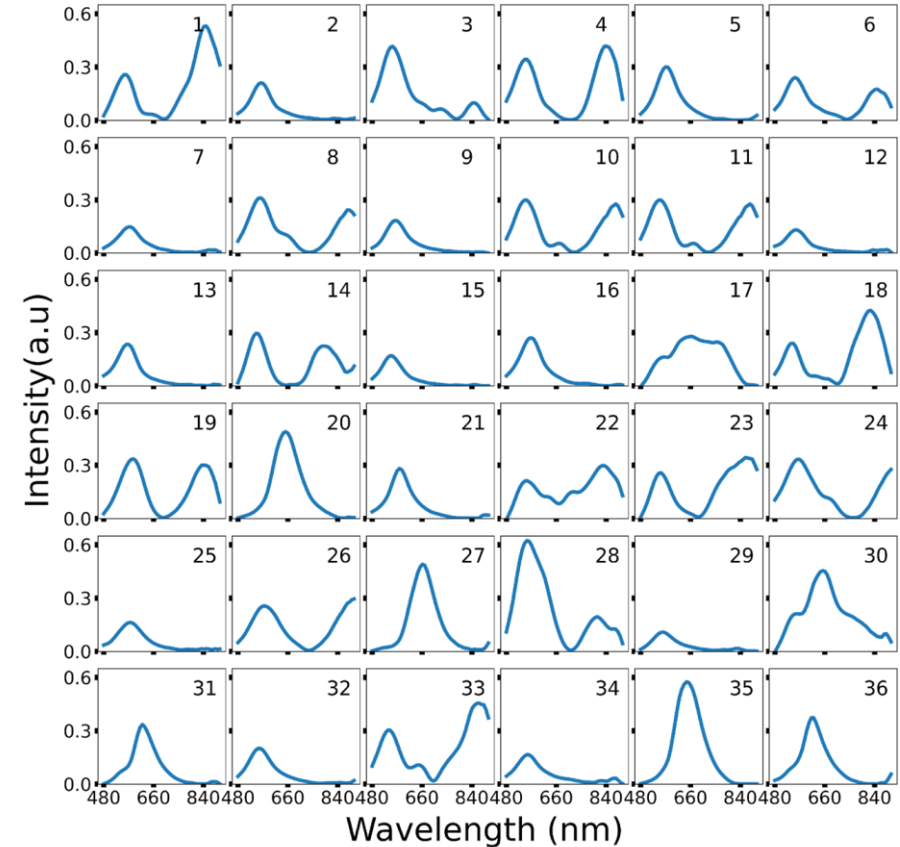# Variational Autoencoders- III
Applications to Real World Systems

Sergei V. Kalinin

Dual VAE: structure-property relationships
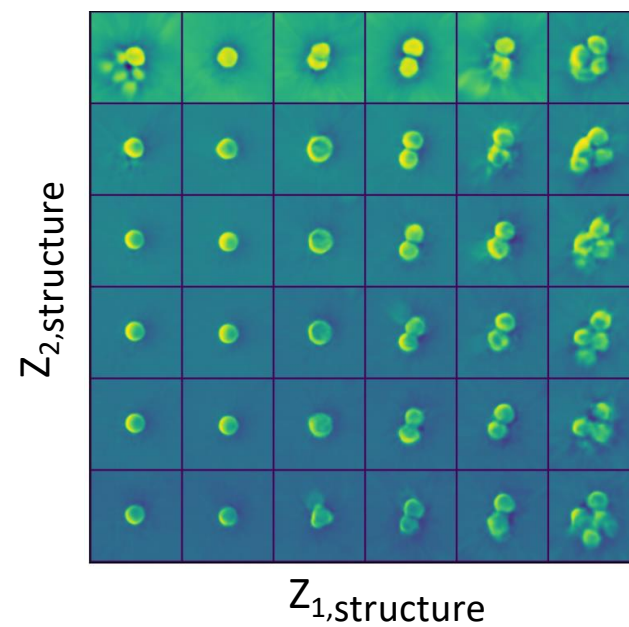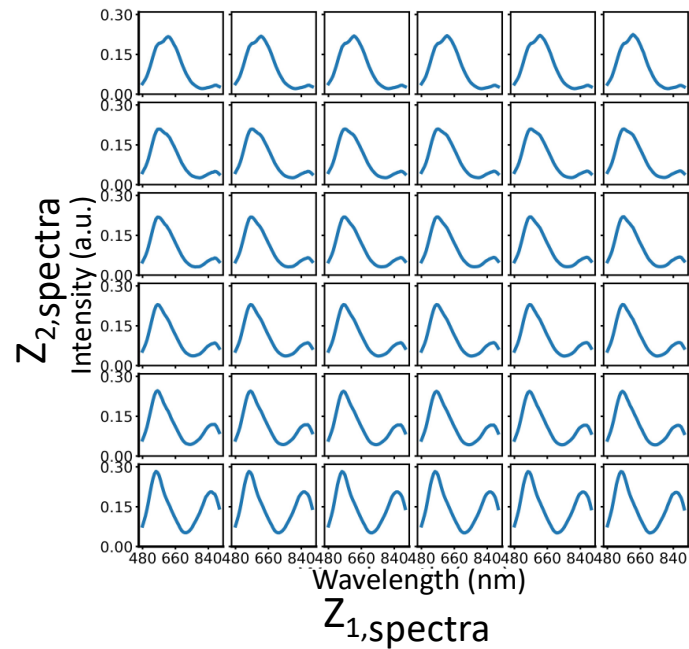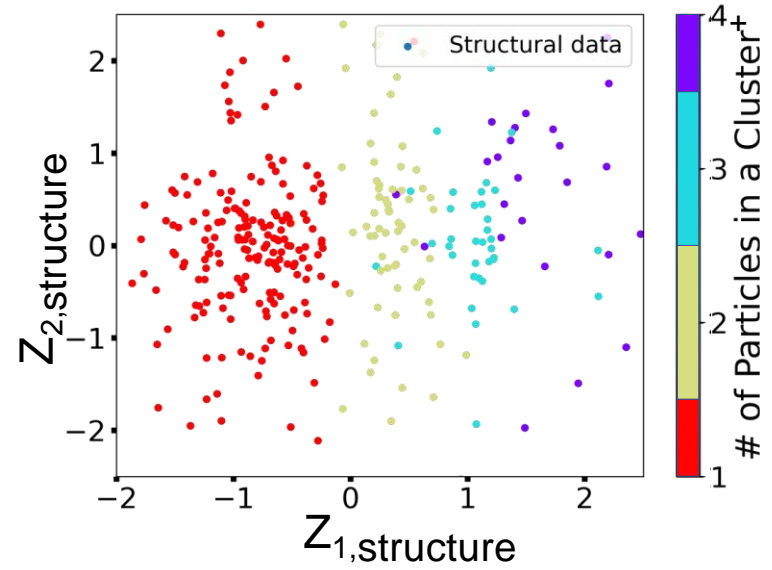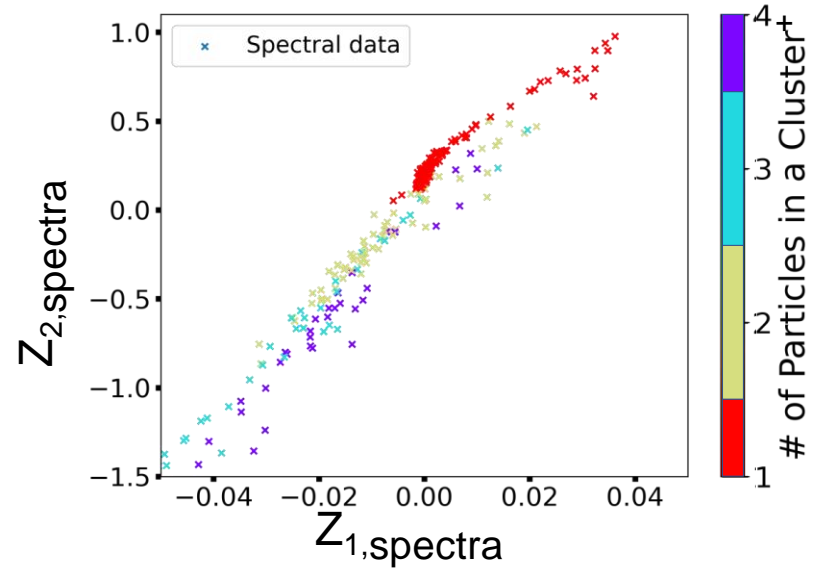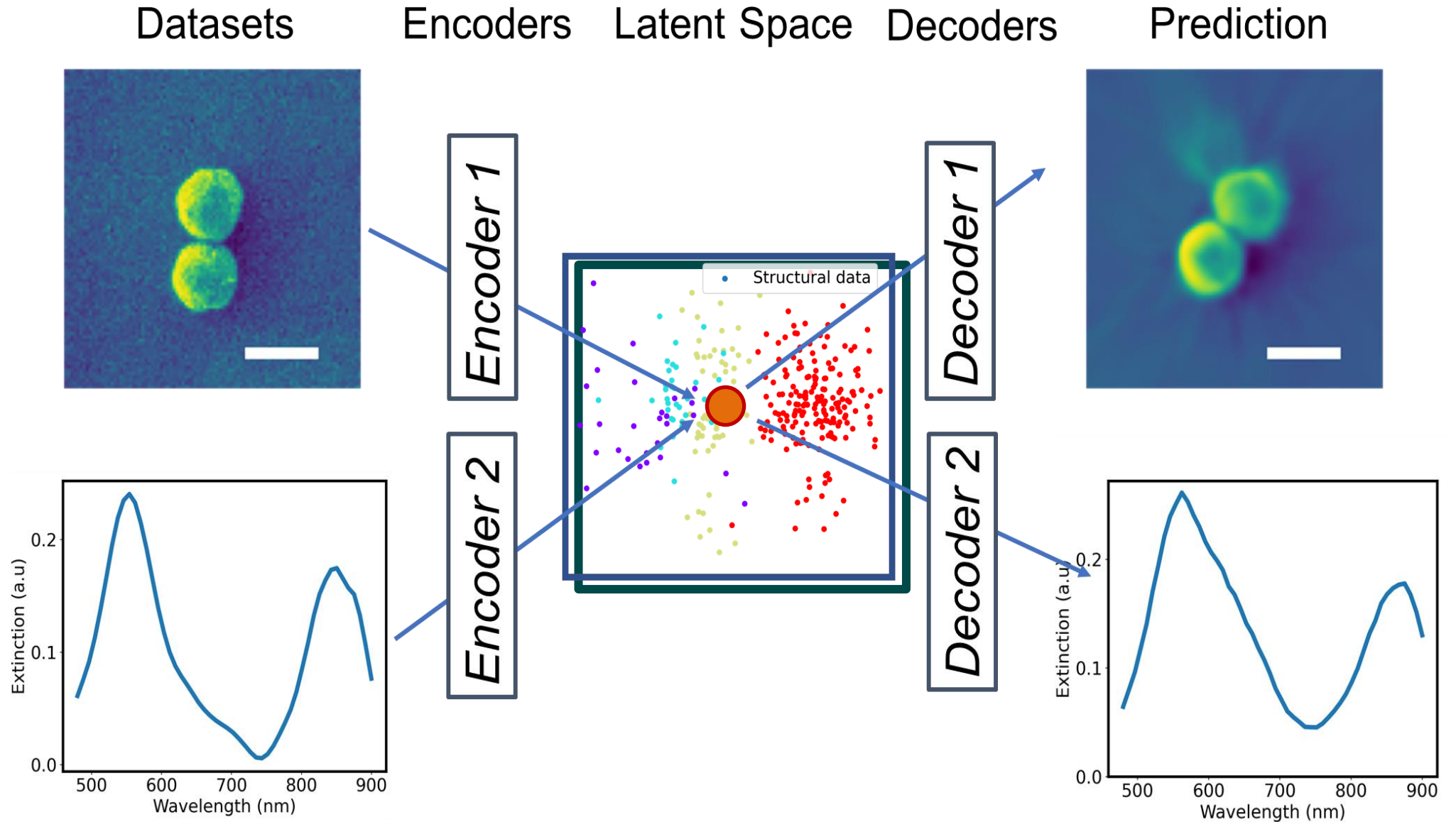
SEM images: "Structure Information"

Hyperspectral microscope: "Property Information"
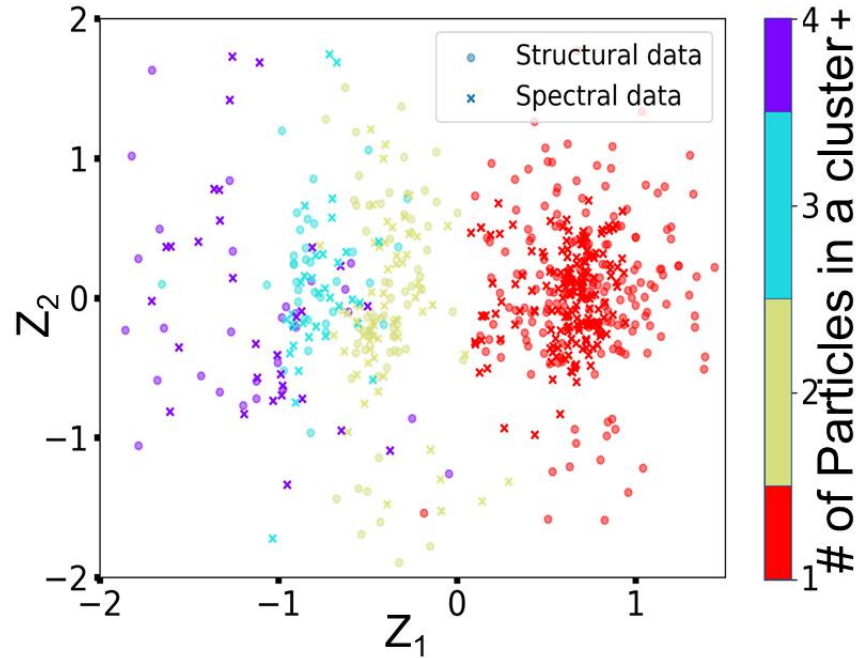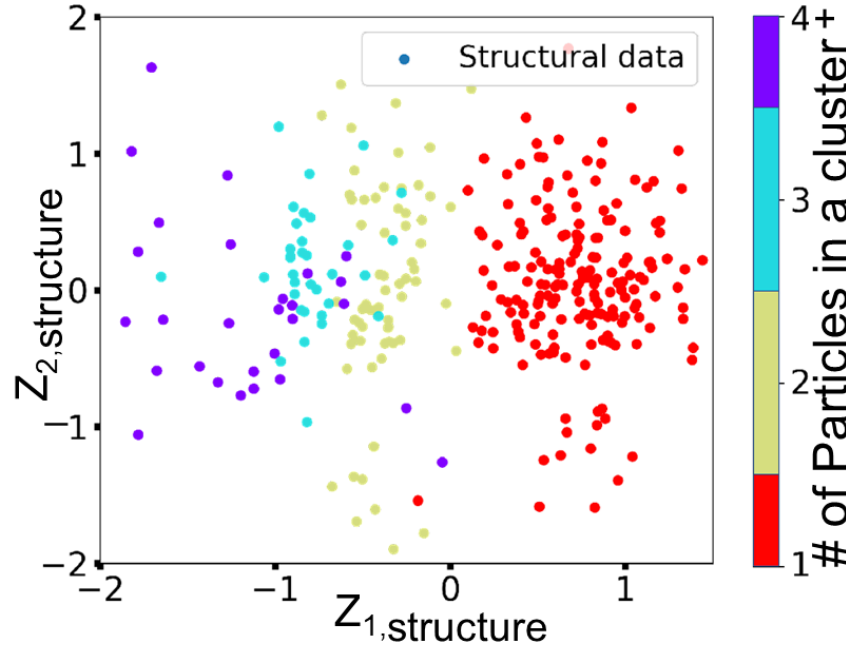
Separated VAE

Dual VAE

Dual VAE: Latent Distributions
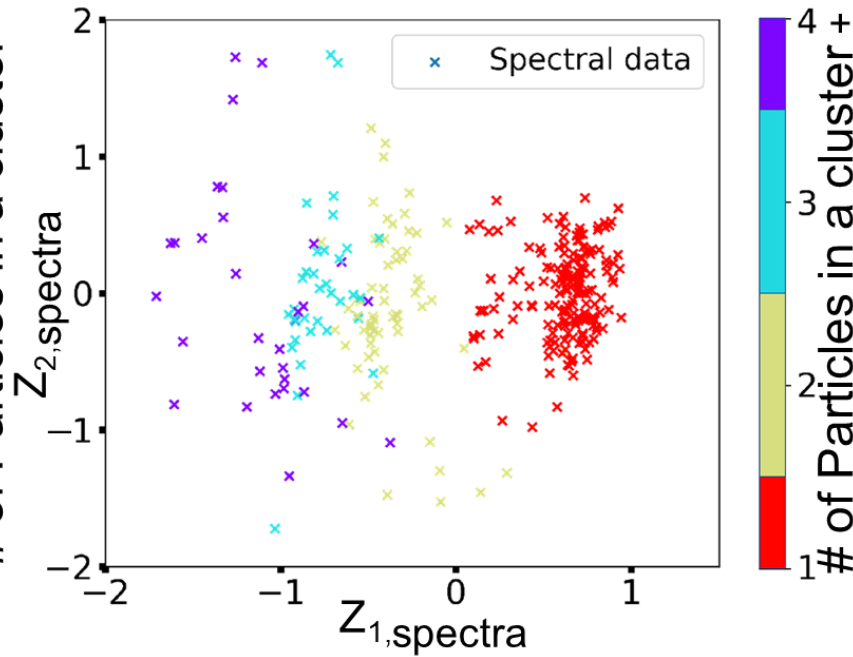
Latent Space Representation

"Dual Latent Space"
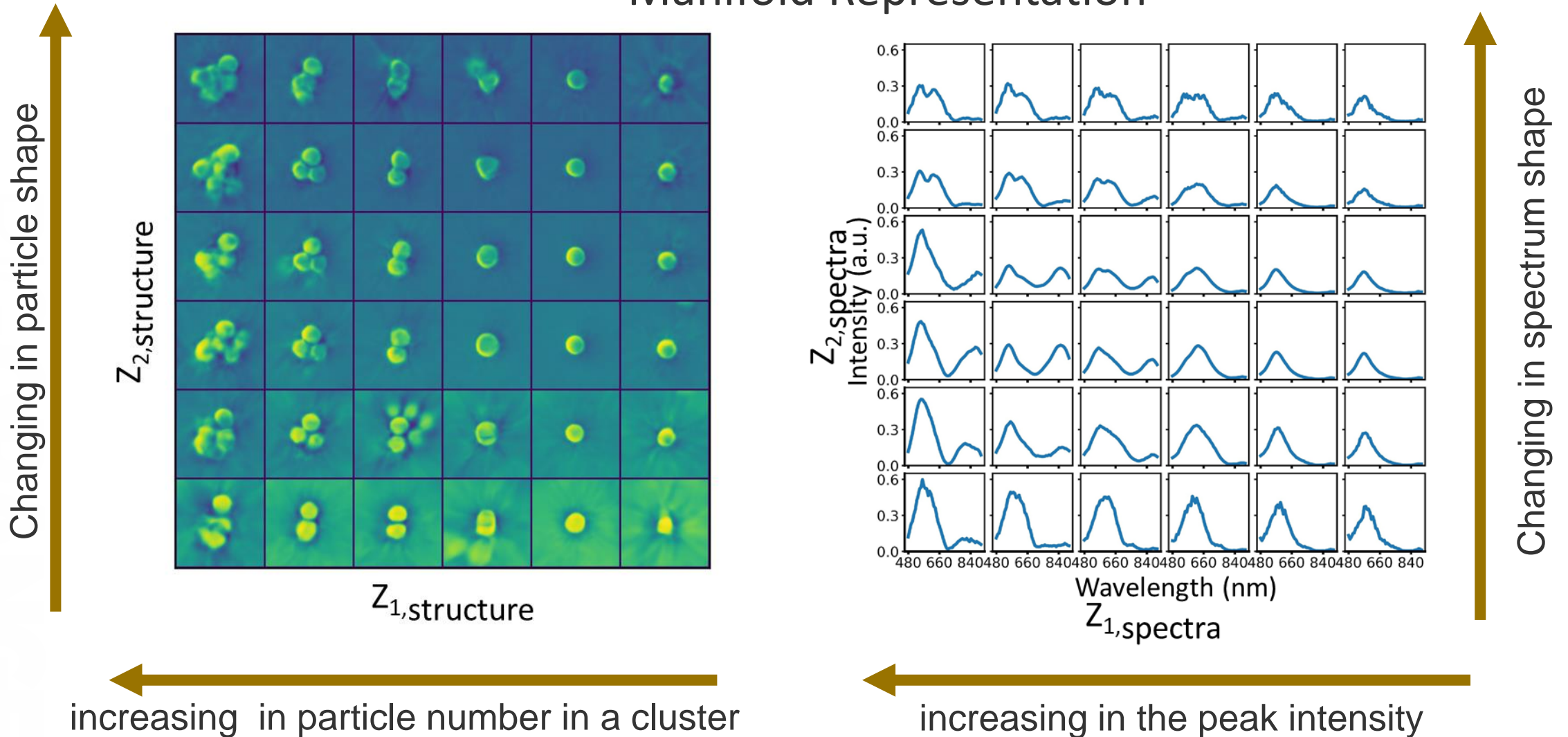
"Structure Information"
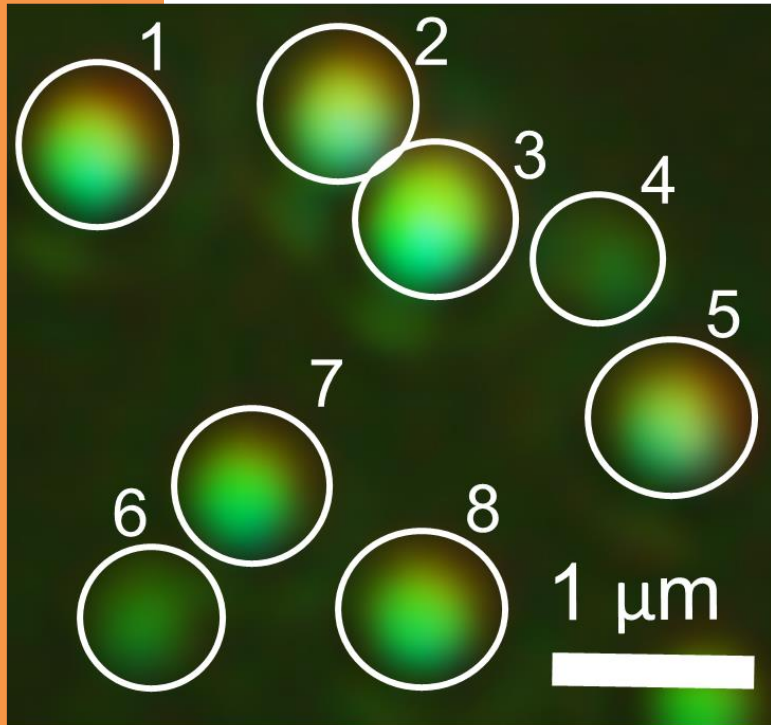
"Property Information"

Dual VAE: Latent Represnetations

Manifold Representation

Dual VAE: Predictions

Example

Overall Particles

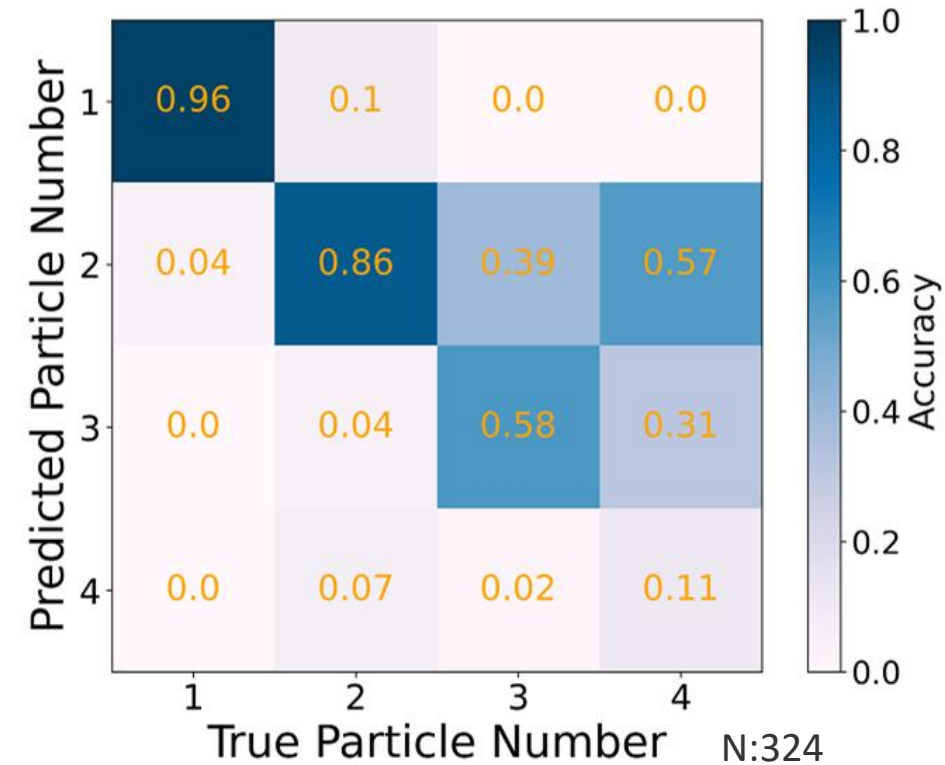Darkfield Image

Ground Truth

Prediction

1 µm

100 nm
100 nm
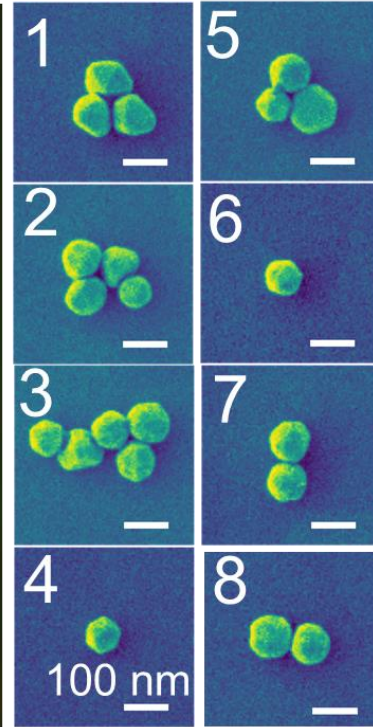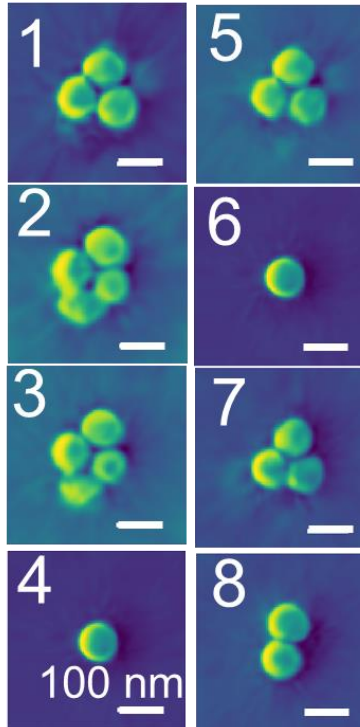
Dual VAE: Predictions for only 1 and 2 mers