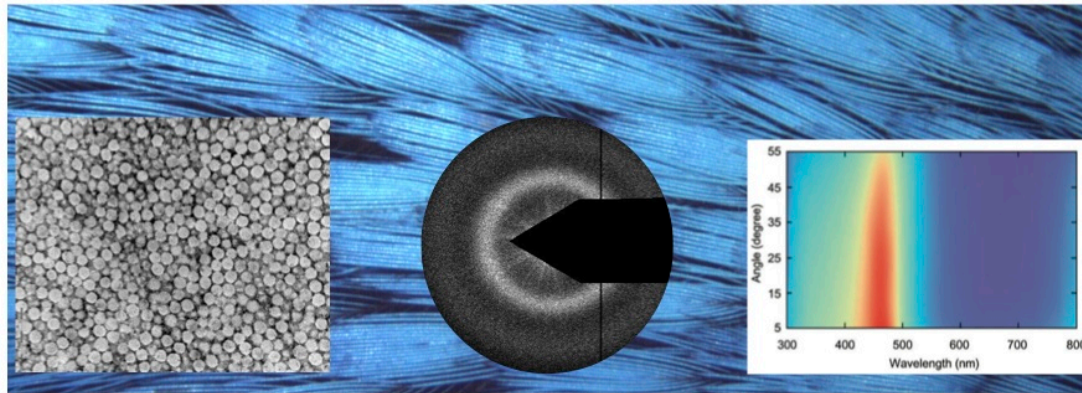


What has soft matter physics got to do with bird feathers?



Many species of birds have feathers with colors that are the result of light scattering from a disordered arrangement of nanoscale air spheres. The feathers appear to be the same color from every angle. Inspired by these beautiful feathers, we design structures of polymer nanoparticles that produce color the same way. This is a new way to make color from nanostructures and could be useful for textiles, coatings, and cosmetics.

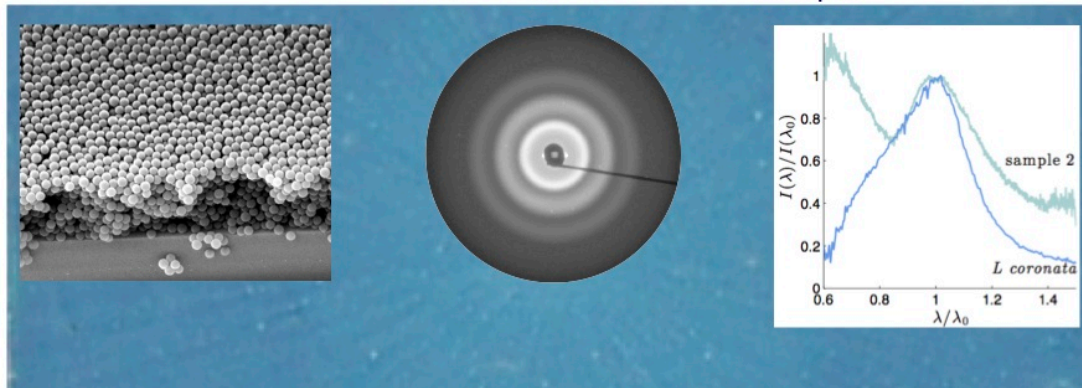


Background photo: the feathers from a Blue-crowned Manakin.

The TEM image above shows the air spheres in a feather. The SEM image below shows the polymer spheres in the biomimetic sample.

Small-angle X-ray scattering patterns from a feather (above) and a biomimetic (below) reveal information about the nanostructures.

The optical reflection spectra above from a feather shows that it is the same color from every angle. The plot below compares the optical spectra of a feather and a biomimetic sample.



Background photo: a biomimetic sample of polymer nanospheres

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