

## **Lecture 13: Assessing Zeta Potentials**

- I. Introduction – the importance of the zeta potential
  - A. nanoparticle-nanoparticle interactions
  - B. nanoparticle-cell interactions
  - C. part of the initial nanomedical system-cell targeting process
  - D. low zeta potential leads to low serum protein binding and potentially longer circulation
- II. Zeta potential basics
  - A. What is the zeta potential?
  - B. How is it measured?
- III. Some factors affecting the zeta potential
  - A. pH
  - B. ionic strength
- IV. Some zeta potential experiences

### **References:**

"Zeta potential measurement using laser Doppler electrophoresis (LDE)":

[http://www.malvern.co.uk/LabEng/technology/zeta\\_potential/zeta\\_potential\\_LDE.htm](http://www.malvern.co.uk/LabEng/technology/zeta_potential/zeta_potential_LDE.htm)

"Why Measure Zeta Potential?": <http://www.malvern.co.uk/malvern/ondemand.nsf/id/67126>

"Zeta Potential: An Introduction in 30 minutes":

[http://www.malvern.co.uk/malvern/kbase.nsf/0/26E2BC622DEE0CAC80256FBE00440C95/\\$file/MRK654-01%20An%20Introduction%20to%20Zeta%20Potential%20v3.pdf](http://www.malvern.co.uk/malvern/kbase.nsf/0/26E2BC622DEE0CAC80256FBE00440C95/$file/MRK654-01%20An%20Introduction%20to%20Zeta%20Potential%20v3.pdf)

Washington, C. "Zeta Potential in Pharmaceutical Formulation":

[http://www.malvern.co.uk/malvern/kbase.nsf/allbyno/KB000022/\\$file/Zeta\\_potential\\_in\\_pharmaceutical\\_formulation\\_MRK036-03-low\\_res.pdf](http://www.malvern.co.uk/malvern/kbase.nsf/allbyno/KB000022/$file/Zeta_potential_in_pharmaceutical_formulation_MRK036-03-low_res.pdf)

Using zeta potential to assess protein adsorption to surfactant coated latex:

[http://www.malvern.co.uk/malvern/kbase.nsf/0/AC284EC6076BF4D6802570D2005651E8/\\$file/MRK707-01%20Protein%20Adsorption%20to%20Surfactant%20Coated%20Latex.pdf](http://www.malvern.co.uk/malvern/kbase.nsf/0/AC284EC6076BF4D6802570D2005651E8/$file/MRK707-01%20Protein%20Adsorption%20to%20Surfactant%20Coated%20Latex.pdf)

Prow, T.W., Rose, W.A., Wang, N., Reece, L.M., Lvov, Y., Leary, J.F. "Biosensor-Controlled Gene Therapy/Drug Delivery with Nanoparticles for Nanomedicine" Proc. of SPIE 5692: 199 – 208, 2005.