

电位滴定法测量 Zeta 电位和 PH 的关系

Potentiometric Titrations are useful for determining a sample's IEP. As mentioned above, the IEP may be desirable or otherwise. Potentiometric Titration plots may display plateau regions for Zeta potential vs. pH. Such measurements enable manufacturers to optimize use of acids or bases for transportation and storage. Figure 2 shows a potentiometric titration on a Ludox-TM silica sample by automatic addition of 1N HCl. This titration was performed automatically by a Zeta-APS, Zeta Acoustic Particle Sizer, instrument from Matec Applied Sciences, Northborough, MA USA 3. Figure 2 shows that below pH 4, the Zeta curve approaches a plateau region while Conductivity increases more rapidly. This suggests that the silica particles are becoming saturated with H⁺ ions as the pH is lowered. Conductivity increases more rapidly as more of these H⁺ ions stay in the continuous water solvent as opposed to diffusing through the slipping plane toward the particle surface.

电位滴定法可用于测定样品的等电点。如上所述，IEP 可能是可取的或者相反。电位滴定图可以显示 Zeta 电位与 pH 值之间的关系变化。这样的测量使制造商通过酸或碱的使用，优化产品的运输和储存。图 2 显示在 Ludox TM 二氧化硅样品上自动添加 1N HCl 时，Zeta 电位及电导率的变化。该过程是由美国 MAS 公司生产的超声电声法粒度及 Zeta 电位分析仪 Zeta-APS 设备完成的。图 2 显示，在 pH < 4 时，Zeta 曲线接近一个稳定区域，而电导率增加得更快。这表明，随着 pH 值的降低，二氧化硅颗粒逐渐被 H⁺ 离子饱和。当更多的 H⁺ 离子停留在连续的水溶剂中时，电导率增加得更快，而不是通过滑面向颗粒表面扩散。

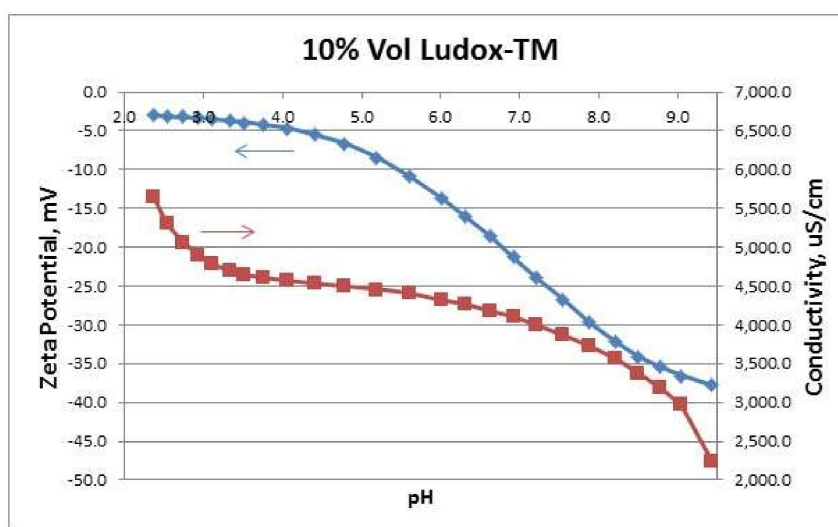


Figure 2. Automatic potentiometric titration of 10%-vol Ludox-TM by 1N HCl addition.

图 2 通过自动电位滴定法将 1N HCl 加入到 10%体积的 Ludox TM 二氧化硅溶液中

