

How do I calculate plug length in Capillary Electrophoresis?

One possible way is to use the "Poiseuille equation" to calculate the plug length:

 $V = (\Delta P d^4 \pi t)/(128 \eta L)$

where V is volume of the injected plug, ΔP is pressure drop down the length of the capillary (pascals), d is the inside diameter (m), η is the fluid viscosity (Pascal-sec), *t* is time the pressure is applied (sec), and *L* is the length of the capillary (m). Here you solve for V to get the injected plug volume. From there, you simply use the cylinder volume equation to convert volume to length of the plug:

 $V = \pi r^2 L_{plug}$

 $L_{plug} = (V / (\pi r^2))$

 $L_{plug} = (V / (\pi (d/2)^2))0$



where r is the inside radius and $L_{\mbox{\tiny plug}}$ is the length of the plug.

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