



Application Sheet:

Dynamic vs Bonded Coated Capillaries

- CElixir can be fully Automated
- Precise EOF every run
- "Fresh" Start every run
- Minimize "Local Voids" in your CZE

The advantages of using a rapid, ***in-situ coating method*** (dynamic coating) for overcoming the inherent problems of permanently bonded capillaries and their constantly changing morphology are many. Bare fused silica and permanently coated capillaries for HPCE are effected by the CE environment of your run. Parameters such as pH, friction and sample adsorption will cause a loss of the coating and this will degrade efficiency and create poor reproducibility.

Sample adsorption to the capillary wall is one of the main culprits producing inconsistent CZE. Each time you do a run on a bare fused silica or a bonded-coated capillary, some of your analyte may be adsorbed to the wall. The "local" zeta potential may fall to zero at this particular spot creating a kind of "void" in the flow. With a sufficient quantity of "voids", the speed of your EOF will change and make quantification and reproducibility very difficult as ***band broadening*** can occur. When you use the CElixir dynamic coating system instead of a bonded capillary or bare fused silica capillary, in each of your runs, the capillary is conditioned, method is run, then stripped and re coated minimizing wall adsorption effects. Your benefit is very simple, the EOF is consistent from run to run: even capillary-to-capillary. This makes your installed capillary on your CE instrument last longer minimizing the time it takes to change and condition capillaries.

CElixir's faster EOF at low pH will further help to minimize band broadening because the faster the separation the less chances samples have to be adsorbed to the wall.

Stability and shelf life can be a potential problem for permanently bonded capillaries. Time and improper storage can cause capillaries to dry out and the internal morphology and chemistry can degrade from it original intent. With dynamic coatings you do not have to worry about this problem as your HPCE column is constantly regenerated, each run.

If you bond the capillaries yourself to avoid these problems, consistency and time to properly bond them become a disadvantage. With a dynamic coating solution that is manufactured under ***GMP Conditions***, you are assured of the same, consistent performance each time.

Another advantage that you get from CElixir's dynamic coating system is that the coating can be ***optimized for your method*** by adjusting the CElixir Accelerator Solution's (B) pH. With bonded wall coatings this is often not possible and usually the bonded coatings are optimized for one specific method or pH range.

