**First Cementation Treatment**

Materials Needed:

* Concentrated stimulation solution
* Concentrated cementation solution
* ½ teaspoon
* 1 teaspoon
* Measuring cup to measure 60ml
* Distilled water
* pH strips
* Container to collect column drainage
* Small container to collect small amount of drainage to measure the pH (a plastic weighing boat works well for this)

*Note: The following instructions assume that you have at least 5 ml of fluid sitting above the surface of the soil in your column.*

Checklist:

*Before adding the cementation solution, flush another stimulation solution through the column.*

* Add ½ teaspoon of concentrated stimulation solution into the small measuring cup.
* Add distilled water for a total volume of 50 ml.
* Use a measuring spoon to stir the solution.
* Remove the free end of the tubing on your column set up from the pegboard and lower it into the drainage container. Allow approximately 5 ml of solution to drain into the container and then stop the flow by raising the end of the tubing again; put it back in the pegboard. -- This removes a volume of solution approximately equal to the volume of solution that was in the tubing.
* Add approximately 15ml of stimulation solution to the top of the column.
* Lower the tubing again and catch the next 5 to 10 ml in the small container used to collect the fluid for pH measurements.
* Place the end of the tubing into the container for column drainage and continue adding the stimulation solution until all 50 ml has been added.
* Stop the flow of stimulation solution through the sample when at least 5 ml of fluid is sitting above the surface of the soil in the column. -- You can do this by raising the end of the tubing above the level of the top of the soil surface in the column and placing the end of the tubing through the pegboard. (Suggestion -- allow the solution to drain until the water level reaches the 55 ml mark and then put the tube back in the pegboard to prevent further flow.)
* Measure the pH of the fluid collected in the small container.
* Rinse measuring cup and pH dish with distilled water and allow them to dry.
* Record the stimulation treatment and the pH measured in your lab notebook. Be sure to include any observations you made about the solution, the sample, etc.
* Measure and record the pH of the fluid collected.

*Once the stimulation solution is flushed through the column, proceed to add the cementation solution to the column.*

* Add 2 teaspoons of concentrated cementation solution into the small measuring cup.
* Add distilled water for a total volume of 50 ml.
* Use a measuring spoon to stir the solution.
* Remove the free end of the tubing on your column set up from the pegboard and lower it into the drainage container. Allow approximately 5 ml of solution to drain into the container and then stop the flow by raising the end of the tubing again; put it back in the pegboard.
* Add approximately 15ml of cementation solution to the top of the column.
* Lower the tubing again and catch the next 5 to 10 ml in the small container used to collect the fluid for pH measurements.
* Place the end of the tubing into the container for column drainage and continue adding the cementation solution until all 50 ml has been added.
* Stop the flow of cementation solution through the sample when at least 5 ml of fluid is sitting above the surface of the soil in the column. -- You can do this by raising the end of the tubing above the level of the top of the soil surface in the column and placing the end of the tubing through the pegboard.
* Measure the pH of the fluid collected in the small container.
* Rinse measuring cup and pH dish with distilled water and allow them to dry.
* Record the cementation treatment and the pH measured in your lab notebook. Be sure to include any observations you made about the solution, the sample, etc.
* Measure and record the pH of the fluid collected.