Technical Bulletin # 50

To: Coulometrics Support Personnel

From: Applications/Engineering Dept.

Date: January 31, 2006

Subject: Leak Check Procedure for CM5130 Acidification Module.

Procedure:

CAUTION: You will be pressurizing the system by following this procedure. Wear safety glasses and lab coat when performing this procedure. A sudden release of pressure may cause the KOH to spray out of the pre-scrubber. You may wish to empty the pre- and post-scrubbers before continuing. If using an external carrier gas be sure that the outlet pressure of the tank is set to 8-10psi.

Refer to the diagrams below to see where each part of the procedure takes place.

The objective of the leak check procedure is to block the flow of carrier gas through the acidification module system, thereby causing the system to pressurize and reach equilibrium. If no leaks are present, as the system reaches equilibrium, the ball in the flowmeter should drop from 100 ml/min. to 0 ml/min. If the ball does not drop to 0 ml/min, then a leak is indicated and needs to be addressed.

Step 1 – Prepare a check valve for the procedure – Using one of the check valves supplied by UIC (part# CM192-003) determine the direction of flow through the check valve. This is easily accomplished by blowing into one end of the check valve. If you are able to blow through the valve then this is the normal direction of flow. If not, then this is the restricted direction of flow. Place a small union (part# CM191-001) on the restricted flow side of the check valve.

Step 2 – Turn on the acidification module, attach a sample flask and set the carrier gas flow rate to 100 ml/min.

Step 3 – Place the check valve in-line on the outlet side of the post-scrubber – See Diagram 1 below.

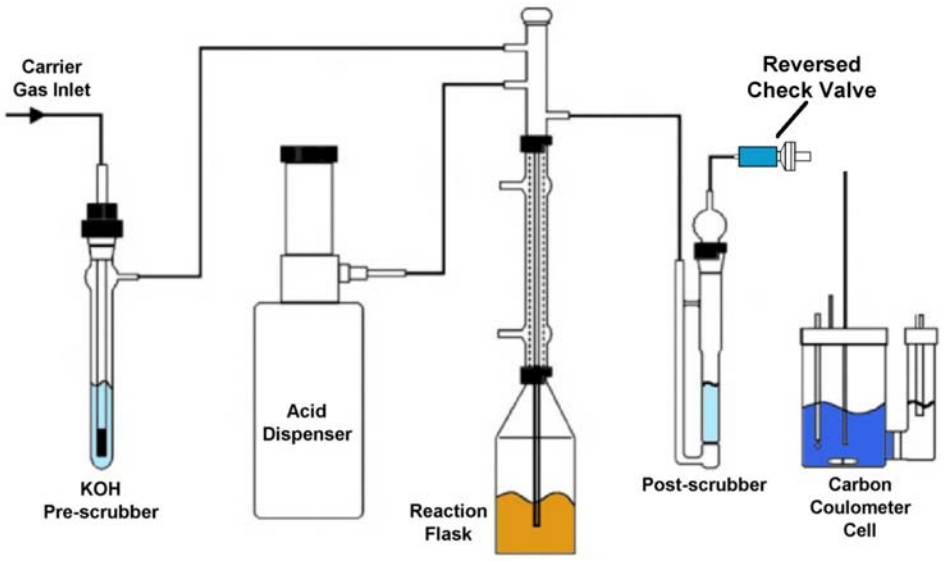

Diagram 1

Step 4 – Monitor the carrier gas flow rate on the flowmeter – The flow rate should steadily drop from 100 ml/min to 0 ml/min over a period of about 2 minutes. If the carrier gas flow rate does not drop to 0 ml/min within 5 minutes a leak is indicated.

Step 5 – Determine where leak is occurring – There are a couple of methods for determining the location of the leak. One is to leave the reversed check valve in place and use a soap solution (or a product such as Snoop) and squirt it on all external connections and joints and look for bubbling. Another method is to move the reversed check valve back through the system, attaching it at different points, and monitoring the carrier gas flow rate (see Diagram 2 below).

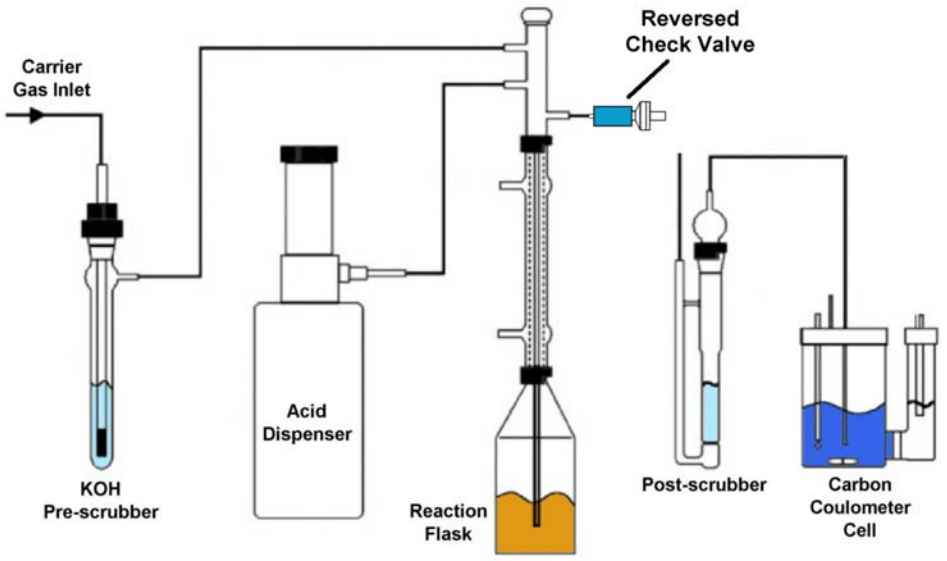

Diagram 2

Wherever the reversed check valve is in the system when the flow rate drops to 0 ml/min, the leak is occurring in the part of the system just ahead of the check valve.

Step 6 – Visually inspect connections - Visually inspect the small, barbed connectors that are used to connect the Teflon tubing to the luer connector on the back of the coulometer. Also inspect the same type of connector used on the cell inlet tube. Also inspect the rubber septa at the top of the sample column adapter for rotting or splitting.

Step 7 – Repair the affected part – It is usually a simple matter of replacing a rubber union or barbed connector.