

# Test Report

## On

# “Collection and Release Characteristics of Selected Clinical Swabs”

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## Statement

The study was conducted by the team of Dr. Kunapuli T Madhusudhan at Clean Earth Technologies LLC, 101 North Chestnut Street, Winston-Salem, NC 27101.

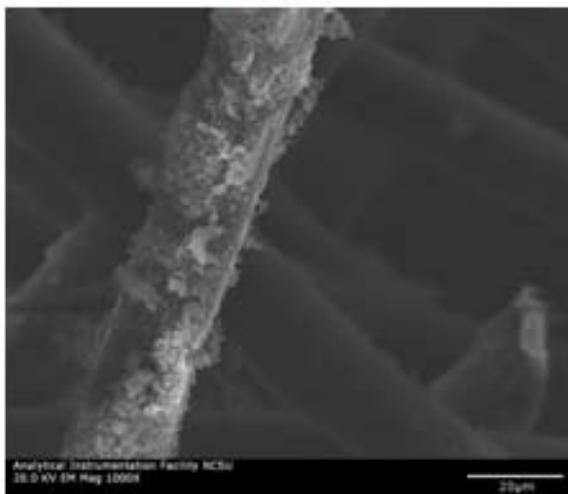
## **Introduction**

The purpose of preanalytical devices such as swabs is to collect specimens containing antigens, nucleic acids, and microorganisms from various sites of the body for clinical diagnosis of ailments. The diagnostic sensitivity of a clinical test is often dependent on the number of cells or antigens collected as and released by the sampling devices such as swabs. As the swab head is in direct contact with the organisms or antigens from the collection site, the construction of swab and its physico-chemical properties of swab head fibers play a significant role in collection and release. The ability of two flocked swabs, namely nylon flocked of Copan and HydraFlock® of Puritan to collect and release bacteria was studied in a model system and the results compared.

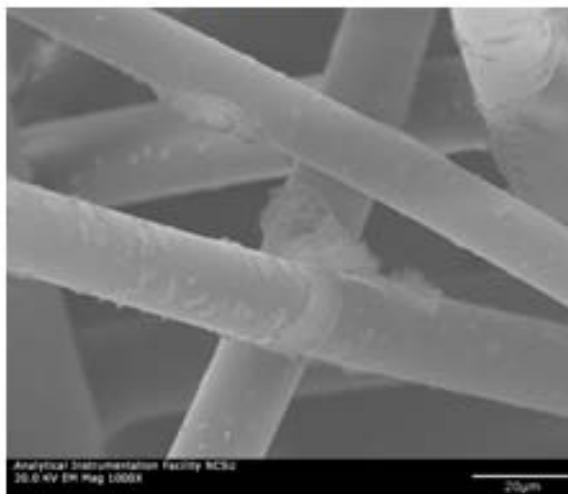
## **Materials and Methods**

To study the ability of swabs to collect bacteria qualitatively in a model system, swab tips were placed in 1% polystyrene beads (1  $\mu\text{m}$ ) suspension for 15 sec, then removed, air-dried for 45 sec and prepared for Scanning Electron Microscopy (SEM). To measure the release of bacteria in the same model system, swab tips adhering the polystyrene beads as described before were placed in 2 ml of distilled water, vortexed at high speed for 10 sec, and dried before preparing for SEM examination at various magnifications.

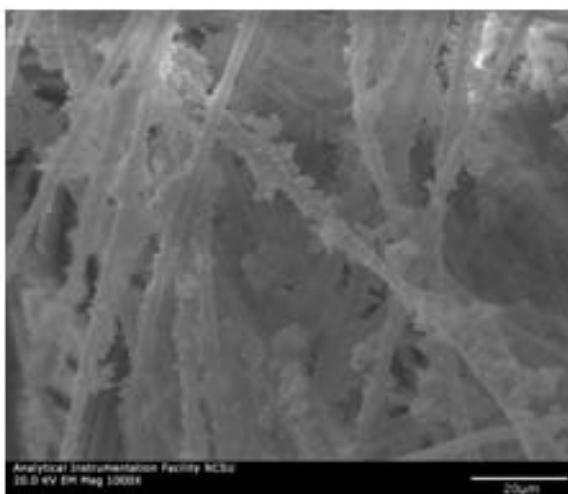
## Unwashed



## Washed



**Copan nylon flocked swab**



**Puritan HydraFlock® swab**

## Results and Conclusions

SEM photomicrograph of swab tips before and after washing is shown above. The SEM results revealed two most significant qualitative observations. First, the bead collection by swab head of HydraFlock® was superior to nylon flocked swab. Although only fractional release of beads by the HydraFlock® was observed, the total number of beads released is superior to or comparable to nylon flocked swab (qualitatively) due to a large number of beads collected by HydraFlock®.

The results of the model system suggest the ability of HydraFlock® to collect large number of microorganisms compared to nylon flocked swab.