

Plasma technology for fast, effective tip cleaning

Tecan has teamed up with Cerionx Inc., the sole provider of automated pipette tip cleaning systems using 'cold' plasma, in an exclusive global distribution agreement for the supply and marketing of the Cerionx 8-channel TipCharger™ System.

It is estimated that over 99% of all matter in the known universe is in the form of plasma – lightning and flames are the only two naturally occurring forms on earth. However, through advancements in physics and chemistry as well as the harnessing of alternating currents, the breadth of man-made plasmas continues to widen. Pennsylvania-based company Cerionx uses a man-made, atmospheric pressure 'cold' plasma in its unique TipCharger™ System to rapidly and thoroughly clean pipette tips more efficiently than traditional solvent-based methods.

Atmospheric plasma begins with the capturing of free electrons to charged dielectric plates. Through changes in polarity, these electrons are forced to mobilize between a set of plates resulting

in an electron avalanche (Figure 1). By drawing air in between these plates and through the electron field, the components of air are bombarded with electrons, causing the fracturing and/or activation of CO₂, H₂O, O₂, and N₂. The result is a 'cold' or 'non-thermal' plasma field where most of the input energy is channeled to the electron component of the plasma while the resulting ions and neutral components remain at or near room temperature. In addition, highly energetic metastable atomic species are generated. These species have the appropriate number of electrons, but are displaced to higher shells and exhibit high reactivity and some selectivity in their reaction capabilities. The plasma ions and metastable atomic species react rapidly with biologicals and organic solvents to facilitate their breakdown and eventual removal (Figures 2 and 3).

The patented cold plasma technology developed by Cerionx is quite unique and, although plasma has been used in other cleaning applications, the TipCharger™ is the first to apply it to pipette tip cleaning in the laboratory environment. In contrast to the conventional solvent-based cleaning methods by dilution, TipCharger™ generates no solid or liquid waste, eliminates the use of bleach washes and generally speeds up current wash protocols.

The collaboration between Tecan and Cerionx began in the summer of 2005, when Mr Paul Hensley, founder of Cerionx, visited the Tecan facilities with an early model of the TipCharger™ system. Tecan's R&D laboratory tested the unit thoroughly to fully assess its potential with Freedom EVO® liquid handling workstations, and an exclusive global distribution agreement for Tecan to market the Cerionx 8-channel TipCharger™ System was finalized in December 2006.

Ms Tia Smallwood, Director of Marketing at Cerionx, elaborated: "We knew that TipCharger™ would provide a manufacturer of liquid handling workstations with significant added value and help differentiation in a crowded market. We approached Tecan as the worldwide leader recognizing they could position TipCharger™ to maximum advantage. We really believe that the sum of these two products is greater than each of the parts."

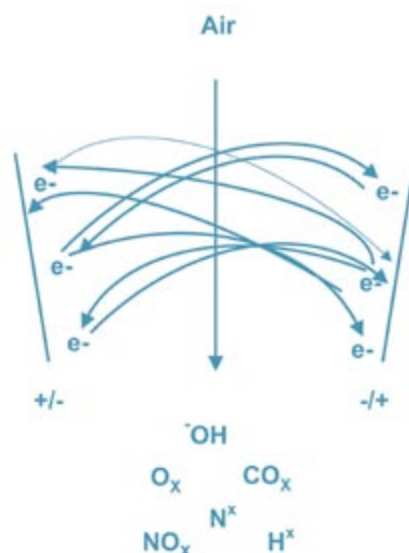


Figure 1: Generation of atmospheric plasma and the subsequent ionization/activation of room air.

Figure 3: Artist's impression of plasma cleaning action of pipette tips in the TipCharger™ cleaning station.

Even before the agreement was signed, Tecan and Cerionx worked closely together to provide several customers with the first systems to combine the TipCharger™ with Tecan instruments. One of the early users was Transnetyx Inc., a genotyping service provider in Memphis, Tennessee. Mr Bryan Rushing, Automation Engineer at Transnetyx, explained: “We had been using a bleach solution rinse protocol on our six Tecan Freedom EVO and Genesis RWS™ workstations but, by switching to the TipCharger™, we found that our protocol achieved a 40% reduction in processing time. Processing speed is critical to our business. We guarantee delivery of our results in 24 or 72 hours, achieving 99.973% accuracy.”

Mr Mark Robillard, Vice President of Sales and Marketing of Cerionx, added: “This early proof of concept demonstrated the good technical fit of the TipCharger™ with Tecan workstations, and the experience confirmed our belief that the genotyping, genomics and like markets offer extensive opportunity.”

In the future, Cerionx is planning to validate the TipCharger™ for clinical environments, making the technology available to even more Tecan users, and new formats of the technology are also under development. Mr Robillard said: “Tecan is a great partner for us; we work in very similar ways. Both companies are aligned around the notion of proving technologies one application at a time, and are committed to development through proof of application. Tecan is a tremendous partner to work with and, at Cerionx, we are really excited to be working together. We hope and expect the collaboration to lead to a very active exchange in the future.”

TipCharger is a trademark of Cerionx Inc.

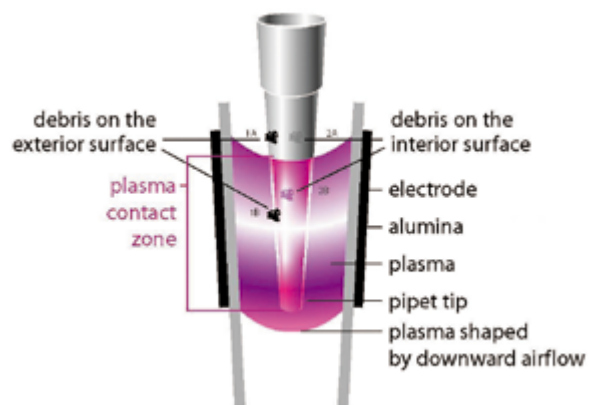


Figure 2: Plasma cleaning action in and around a pipette tip.