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ELECTRIC AND MAGNETIC FIELDS AND ELECTRON CHANNELING IN HUMAN HAIR

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SUMMARY

Previous experiments using a form of corona discharge analysis called Gas Discharge Visualization (GDV) confirmed that human hair has a capacity for channeling electrons. Multiple experiments showed a definitive decrease of electron channeling when attached human hair was cut. This decrease was not observed in commercial hair swatches. This experiment was designed to determine the effect of a constant electric and magnetic field on the hair's capacity to channel electrons. Electric and magnetic fields excite and orient electrons, respectively. Exposure of human hair to these fields would provide further evidence of electron channeling between human hair and body.

Human hair was tested in an adiabatic chamber using the dynamic GDV technique. The cross-section of a freshly cut hair bundle was placed on the electrode of the GDV instrument where it was exposed to an electric and magnetic field in tandem.

Both the constant electric and magnetic fields were applied to detached freshly cut human hair, and commercially sourced hair swatches. The fields had a statistically significant effect on GDV parameters for the freshly cut human hair. The shift between the baseline (before field influences) and the measured response (during field influences) for the freshly cut hair swatch was significant. The effect was reversible, reproducible and statistically significant. In contrast, the fields had no effect on commercially sourced hair swatches.

Results from the constant electric and magnetic fields in tandem indicate that a freshly cut human hair shaft may allow for the transmission of electrons, based on a channeling mechanism. The channeling capacity of the hair shaft for freshly cut hair is different than that of the control hair swatches, indicating that a change occurs after hair is separated from the body. These outcomes support the hypothesis of the transmission of signals between human hair and body.

INTRODUCTION

Traditionally, hair has been considered to be an inert tissue composed primarily of dead keratinized cells, while the hair follicle has been regarded to be vital [1,2]. The interaction between hair and body has not been commonly hypothesized. However, previous experiments have determined a relationship between human hair and body. Experiments using Gas Discharge Visualization (GDV) confirmed that human hair has a capacity for channeling electrons [3]. This technique has been used to detect immediate responses to the cutting of attached human hair. Based on multiple experiments, a definitive decrease in the average intensity GDV parameter was observed in the attached hair when cut. This decrease, or any change, was not observed in commercial hair swatches—a decrease that was perhaps due to the gradual decline in the capacity to channel electrons. It was initially hypothesized that bound water was responsible for the channeling of electrons. Subsequent research disproved this theory, as corona discharge signals remained constant through a given range of relative humidity (RH), even at 0 % [3].

In this experiment, human hair was tested in an adiabatic chamber using the dynamic GDV technique. This technique has the ability to identify minute, yet significant electron activity changes in a test subject. This change in electron activity is detected by inducing a corona discharge using a strong electromagnetic field (EMF) environment. The EMF creates a photon emission which is observed as a glowing discharge from the test subject. This glowing corona discharge is digitally captured with either photographs or videos in order to quantify real-time fluctuations with visual parameters such as brightness, area, and shape. The corresponding GDV software analyzes the qualitative images to produce quantitative measurements of electronic energy responses of the tested material.

In this research, GDV was utilized to determine the effect of a constant electric and magnetic field on the hair's capacity to channel electrons. This data could further substantiate the potential relationship between human hair and body.

MATERIALS AND METHODS

Swatches of freshly cut human hair from healthy volunteers and control commercial swatches of sourced, human hair were tested using dynamic GDV. For the purpose of this experiment, a panel was assembled consisting of 15 healthy volunteers, both male and female, ranging in ages eighteen to fifty-five. All volunteers had dermatologist-certified healthy hair, without any traces of chemical treatments. Hair specimens were taken according to the aforementioned technique. After cutting, hair specimens were immediately placed on the electrode where all measurements were taken. In parallel, approximately 50 standard single-sourced, virgin hair swatches, including various levels of pigmentation, were tested.

An adiabatic chamber was built to ensure standard temperature and pressure conditions (25º C; 1 atm = 760 mm Hg) and 60% RH. The freshly cut hair swatches measured 10 cm long and were cut from the back of the head approximately 5 cm from the scalp.

The cross-section of both freshly cut hair and a commercially available hair swatch were placed on the electrode of the GDV instrument. After placement on the electrode, a dynamic discharge was applied (see Figure 1). The dynamic discharge lasted for 5 seconds, with images being captured at a frame rate of 30 frames per second. This resulted in over 150 images available for the evaluation of each sample. Each test sample was tested 5 times, for a total of 750 images. Figure 1 represents one image out of the 150 images taken during the corona discharge. For all test samples, initial readings or discharges were measured, without the influence of an electric or magnetic field. This reading served as a baseline. Next, both electric and magnetic fields were applied to the test samples in tandem, at a range of 0 to 200 volts/cm and 0 to 200 millitesla (mT), respectively. Subsequent readings were taken during the application of these ranges of electric and magnetic field conditions. Results of the corona discharge parameters were calculated using the standard GDV software package.

The test sample was exposed to the influence of an electric field from two parallel electrodes and a magnetic field. The experiment was verified by measuring the time dynamics of the gas discharge around a referenced titanium standard that was placed in the center of the optical lens, and thus calibrated the entire technique for all conditions.

RESULTS

In all cases, a profound response from freshly cut human hair was observed under the influence of electric and magnetic fields. Figure 2 represents the GDV intensity and area parameters for the application of a magnetic field on freshly cut human hair. As is evident from Figure 2, a clear distinction is noted between the baseline measurement and the measurement during exposure to the magnetic field. Upon removal of the magnetic field, this affect was reversible, as both the intensity and area parameters approached that of the initial baseline. A very similar dependence has been noted after the influence of an electric field. Again, the effect was reversible, reproducible, and statistically significant ($p < 0.001$).

In contrast, Figure 3 represents these same influences on a commercial hair swatch. In all cases, there is no clear distinction in either intensity or area between the initial baseline, during exposure to the magnetic field, and after exposure to the magnetic field. It was found that both electric and magnetic external fields, applied in tandem, have no influence on the parameters of the commercial swatches, as seen in Figure 3.

It was also observed that freshly cut human hair responded to electric and magnetic fields, and this response was linear in both cases. A directly proportional relationship was observed with the electric field—increasing the electric field increased the measured parameter (see Figure 4). In the case of the magnetic field, an inversely proportional relationship was noted (see Figure 5). Therefore, the technique of the electric and magnetic field applications was put in perspective as a more suitable development of methods to study the behavior of hair.

In our previous experiments on the behavior of hair to various stimuli [3], it was determined that the separation of hair from the body resulted in a diminishing response in intensity that was registered by dynamic GDV. This response was consistent in multiple studies performed. Likewise, no response was noted for the commercially sourced hair swatches. Observing the behavior of freshly cut human hair over extended periods of time elucidated this notion. It was also determined that the diminishing response was due to the interruption of the channeling of electrons between the hair and body. These processes were observed to be relatively slow, usually taking from 24 to 72 hours to notice a significant decrease in GDV response. In order to support this theory, it was thereby reasonable to apply both constant electric and magnetic fields in tandem over extended periods of time to detect such changes in electron channeling of human hair. Figure 6 indicates that the response of the freshly cut human hair to an increasing electric field diminished over time. The most significant change occurred within 24 hours of the separation of hair from the body.

DISCUSSION AND CONCLUSIONS

In this study, electric and magnetic fields were applied in order to confirm electron activity within hair. In previous experiments, it was concluded that effects of humidity (bound water) had no influence on GDV parameters or electron channeling. Exposure of human hair to electric and magnetic fields in tandem suggest further proof of electron channeling within hair. This channeling could be due to electron availability (in response to an electric field) and/or electron orientation (in response to a magnetic field).

Both attributes (availability and orientation) are perhaps part of the channeling mechanism registered in the freshly cut human hair which appears to undergo a change when separated from the body. The results from the constant electric and magnetic field tests indicate that the composition of the hair shaft may allow for the transmission of electrons via a channeling mechanism. The channeling capacity of the hair shaft is different for freshly cut hair and control hair swatches. This indicates that there is a definite change that occurs after the hair is separated from the body.

The GDV technique offers a highly sensitive and reproducible method for the testing of human hair. GDV testing was able to record specific properties of applied electric and magnetic fields to freshly cut hair that are not observed in commercially sourced hair swatches. The results from the GDV technique offer additional support of the hypothesis that a transmission of signals by means of channeling electrons exists between human hair and the body.

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FIGURES

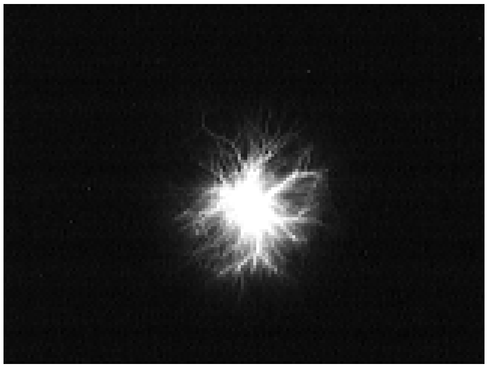

Figure 1. Corona discharge of a cross-section of freshly cut human hair.

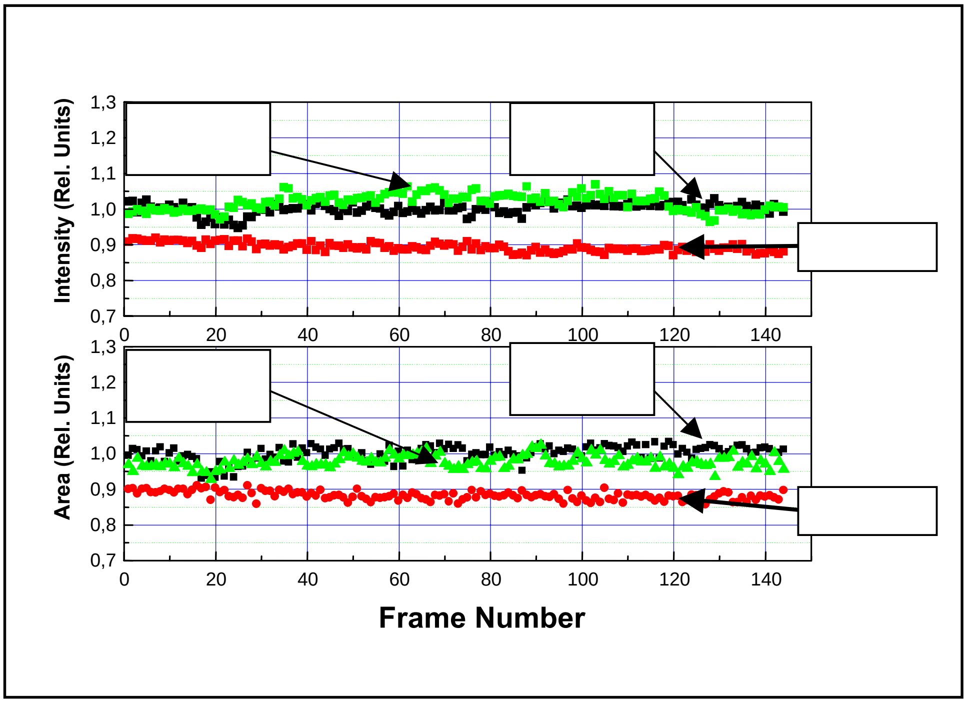

Figure 2. Dynamic GDV intensity and area plots for application of a magnetic field on freshly cut human hair.

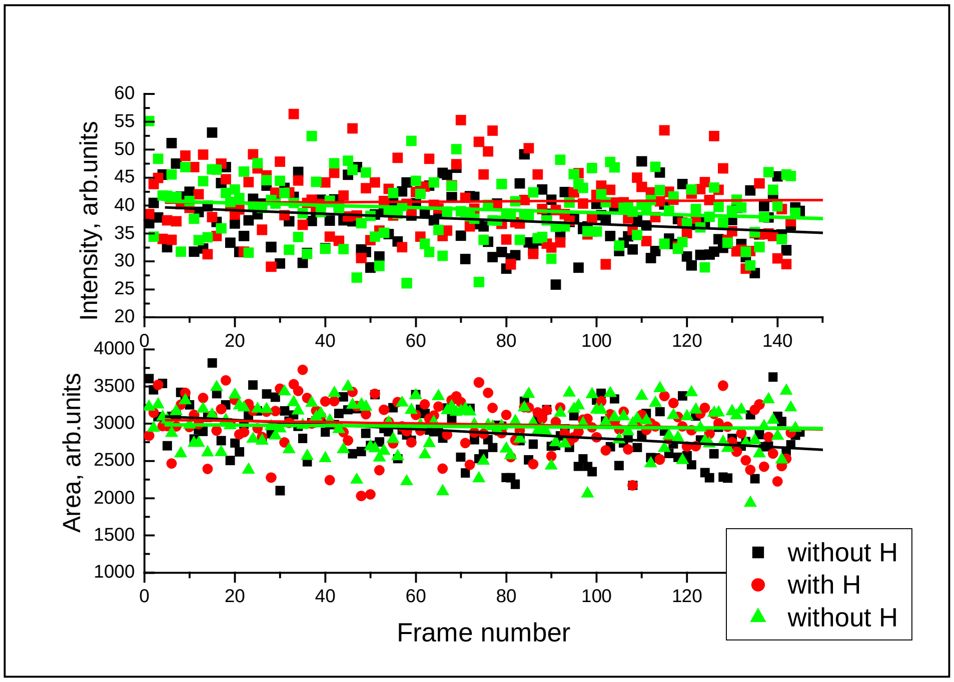

Figure 3. Dynamic GDV intensity and area plots for application of a magnetic field on a commercially sourced hair swatch (Note the dispersion of “field on” and “field off” (before/after) data).

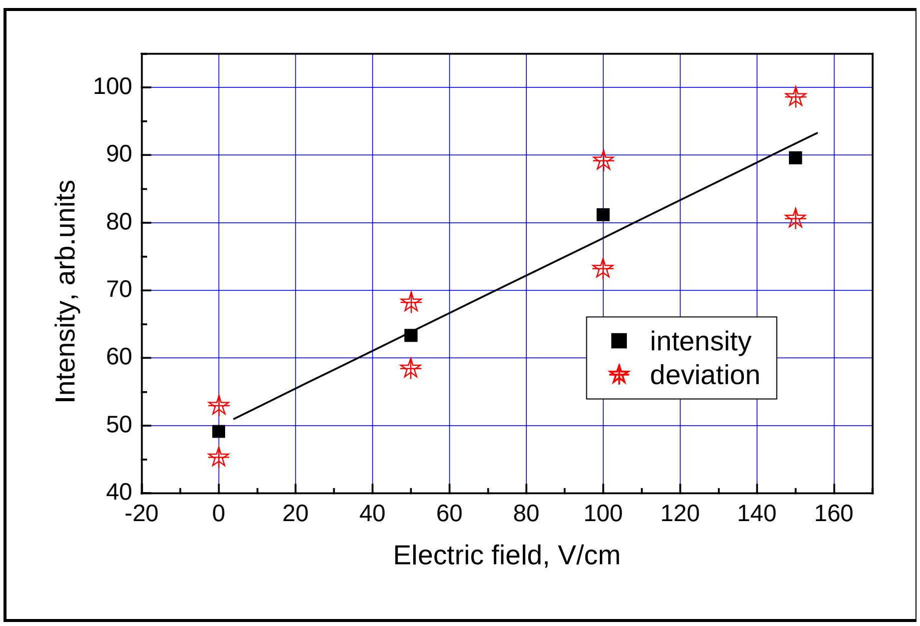

Figure 4. Dynamic GDV intensity plot for application of an electric field on freshly cut human hair.

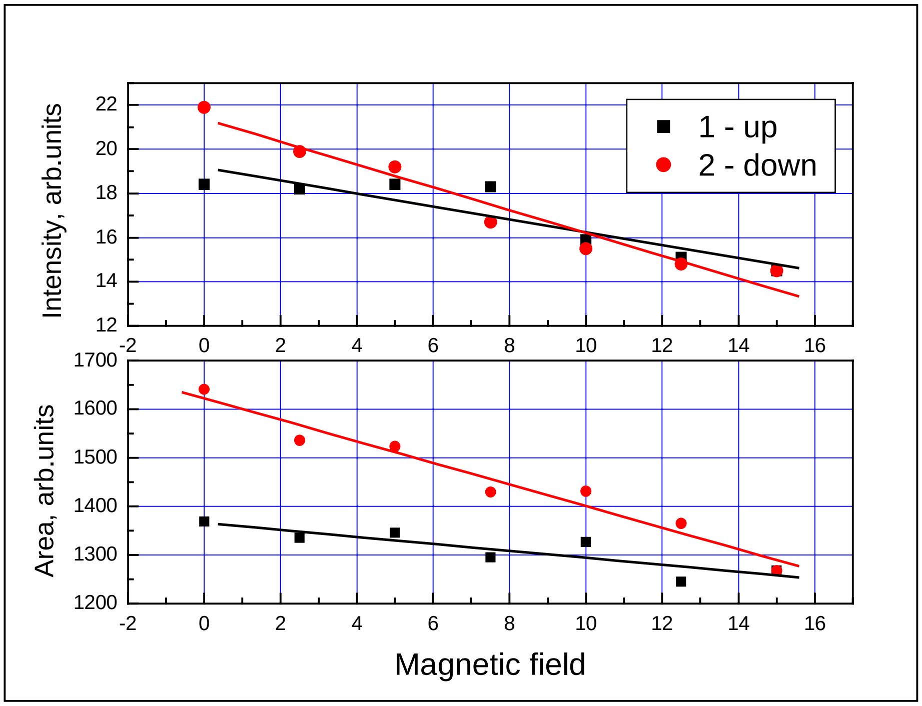

Figure 5. Dynamic GDV intensity and area plots for application of a magnetic field on freshly cut human hair.

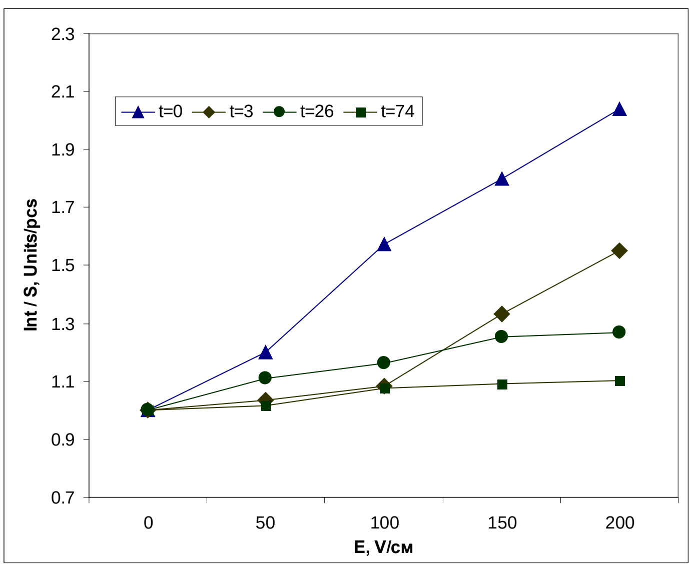

Figure 6. The dynamic GDV intensity response of freshly cut human hair to an increasing electric field over a period of time.