

Charge Separation As The Mechanism For Image Formation On The Shroud Of Turin

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Abstract:

Among the most problematic features of the image on the Shroud of Turin is the fact that the unknown process of image formation is confined to the outermost fibers of the linen cloth, with no discernible alteration within the inner volume of the cloth, and that the image contains vertical displacement information, by which a three-dimensional reconstruction of the crucified body is possible. We recognize two important facts: 1) the Shroud linen is a dielectric material – i.e., the constitutive molecules in its fibers are polar molecules that tend to align themselves in an enveloping electric field that leads to the revealing of surface charges on the outermost layers of the surface fibers, and 2) the human body, being composed of approximately 70% water by weight, is an electrical conductor – i.e., when immersed in an electric field, charged ions within the body will distribute themselves toward the outer surfaces of the body to ensure that no net electric field remains within the body. We advance the hypothesis that a constant, or slowly varying electric field was present in the tomb and that the two stated facts provide the underlying mechanism for formation of an image with vertical displacement information: the revealed surface charges on the Shroud serve as collection sites for polar gas molecules or ions emanating from the body or from the aloe and myrrh that had been applied before entombment, substances that could serve as oxidizers or other active species for inducing visual surface alterations, and the extension of the electric field in the vicinity of the surface of the body out to distances away from the body would provide mapping of surface features of the body onto the non-conforming (“tented”) portions of the Shroud. We demonstrate this electric and geometric process with simplified analyses. We suggest that relatively simple laboratory tests could explore the plausibility of this mechanism and propose that researchers suggest the chemical mechanisms whereby surface fiber alterations could be achieved with preferential surface deposition. Tests such as these could identify the strengths of electric field necessary to produce the image in a timely fashion consistent with the entombment time and determine their magnitudes in relation to the ambient earth electric field, which is known to exist with a magnitude between 100 and 300 volts per meter in the vertical, downward direction. Confirmation of electrically based image formation would enhance the plausibility of this hypothesis. If an anomalous electric field is required, investigations into the origins of such an electric field are warranted.