

Completion of: The Alpha-Particle Irradiation Hypothesis

In reviewing the submitted document on the formation of the images on the “Shroud of Turin,” it is necessary to evaluate the primary parameters that caused the images to appear on the burial cloth of Jesus. The calculations already submitted for the St. Louis Conference on the Shroud of Turin shows that the Alpha-particle Irradiation Hypothesis can provide the necessary elements that produced an image on the burial cloth of Jesus. It also furnishes the required mechanisms that effected a surface image that manifests the depth of the surface image (microns), the high resolution within the images (submicrons), the necessary fluence (flux times time) of alpha-particles of a relatively constant energy and large capture cross-section to reveal an image on the top microfibrils of the cloth. The mean-free path length of an alpha-particle in air is about 4 centimeters which agrees with a limit of the cloth-to-body distance that resulted in no damage (no image formation) to the shroud cloth fibers. The perspiration (sweat) from the skin of the body would be a natural sink to attract radioactive Rn-222, which is a heavy gas and part of the decay chain series from U-238 to stable Pb-206, therefore the body of Jesus becomes a radioactive source that bombards the cloth with alpha particles. And that is the reason the cloth has a whole body image of Jesus which is a unique property that could only be achieved by a dispersion of Rn-222 gas ($t_{1/2} = 3.82$ days) throughout Jesus’ body and the limestone burial chamber (tomb). The straight line path of alpha-particles will not pass through a fiber and given that where two fibers crossed one another that the underlying fiber would be protected from alpha-particle damage by the top fiber. This submicron resolution could only be achieved by alpha-particles (2 protons and 2 neutrons) that are scattered by a single atom. So the bottom underlying fiber would give a dark spot where it was protected by the top lying fiber and that has been what is seen on the shroud fibers.

Because the body is the radioactive source that emits alpha particles that bombards the burial cloth from a distance (contact up to 4 cm) and mirrors the body shape to form a negative image of the entire body on the single length of burial cloth and gives a frontal image and dorsal image of the body. The formation of the body image is governed by the active nuclides of the U-238 decay chain series that includes radioisotopes that follow that portion of the decay chain after the gaseous Rn-222 nuclide and are short-lived daughters of Rn-222 ($t_{1/2} = 3.82$ d). The pertinent daughter nuclides that form images by alpha-particle bombardment are Rn-222, a gas

that emits alpha particles; Po-215, ($t_{1/2} = 3.05$ min) a solid isotope that emits an alpha-particle; Pb-214, (26.8 min) emits a beta-particle; Bi-214 (19.8 min) emits a beta-particle, and Po-214 (164 microseconds) that decays to Pb-210 with an alpha-particle. This chain of short-lived (and therefore are in a state of radioactive equilibrium) until the chain arrives at Pb-210 (21 years half-life) which has a lower equilibrium until the decay chain ends at stable Pb-206.

The cloth folded lengthwise around Jesus' body would be subjected to energetic alpha-particles from decay of Rn-222 and Po-218 (5.5 and 6.0 MEV, respectively) that would damage and darken the crests of cloth fibers. The beta decay particles from Pb-214 (27 min) would transport less than 1 MEV of energy to a separate location (nuclide). The ~100 lbs of myrrh and aloes brought in by Nicodemus and applied to the body would attract and trap the heavy gaseous Rn-222 and particulate Po-218 isotopes and hold them as they decayed and emitted alpha-particles that effectively damaged and darkened the top-most fibers of the burial cloth to create an image. The alpha-particle flux would continue to irradiate the cloth until the body of Jesus was miraculously transported through the cloth via the energy of the resurrection event after about 3 days in the tomb. The burial cloth was essentially deflated and lay flat on the limestone bench while the chin strap that covered his head was rolled up in a separate place.

In John's Gospel, Jesus was identified as the Word of God in the Prologue and stressed that Jesus and his Father were One and specifically stated that Jesus was "the master of his own destiny" during his ministry, and even after his passion, death, and resurrection. Jesus had close contacts with the Essenes who supported him in many ways during his entry into Jerusalem, the preparation and conduction of the Last Supper in the Upper Room and maintained the Upper Room as a meeting place with locked doors for the disciples after the resurrection. The Essenes controlled the Essene quarter of the Jerusalem Temple structure. John the Baptist who was so close to Jesus had the mannerisms of being or previously being an Essene and he baptized in the Jordan River near the Dead Sea where the Qumranites Center was located. John the Baptist wore the clothes of an Essene or someone who had been an Essene and was required to eat the food of the land which was locusts and wild honey.

John's Gospel introduced us to the knowledge that Jesus was pre-existent with the Father as the Word of God in the Prologue and the Word became flesh. Jesus proceeded to demonstrate how he was "the master of his own destiny" by using his divinity to complete 7 or 8 miracles

requiring highly technical and complex concepts and divine intervention in the 4th Gospel. During his crucifixion he died as a king and also a priest. Although it was typical that his legs would be broken, to fulfill scripture his legs were not broken. Similarly the Roman soldier thrust a lance into his side to assure he was dead and this also fulfilled scripture that they will look upon him whom they have pierced. When Jesus was earlier explaining “his hour”, he said “whoever serves me must follow me, and where I am, there also will my servant be. The Father will honor whoever serves me (Jn 12:26). Continuing, he said, “I am troubled now, yet what should I say? Father save me from this hour? But it was for this purpose that I came to this hour! Father, glorify your name. Then a voice came from heaven, I have glorified it and will glorify it again (Jn 12:27). The crowd there heard it and said it was thunder, but others said, an angel has spoken to him.” Jesus answered and said, “this Voice did not come for my sake but for yours... and when I am lifted up from the earth I will draw everyone to myself. He said this indicating the type of death he would die. (Jn 12:32-33).” Now glorify me, Father with you, with the glory I had with you before the world began (Jn 17:5).

According to the Gospel of John, Jesus was aware that in order that scripture might be fulfilled that he said, “I thirst.” There was a vessel filled with common wine and so the soldiers put a sponge of this wine on a sprig of hyssop and put it up to his mouth. When Jesus had taken the wine, He said, “It is finished.” And bowing his head he handed over the spirit. This is a far different final statement than that given by the synoptic gospels (My God, my God, why have you forsaken me?). John’s gospel explains that when Jesus said “I thirst” that it was to fulfill scripture that he would drink the 4th cup of wine from the Last Supper which he did when he added “it is finished,” he was referring to the finishing the Last Supper Passover meal and he did not utter a final cry of hopelessness. He “handed over the spirit” in agreement with “peace be with you” and to assure his disciples that he was still with them and he was still in control of his destiny, even after the resurrection. This was in keeping with God’s message at the Transfiguration, “Listen to Him!” This was a universal and an eternal proclamation. It was a response to Jesus’ request to glorify him and an affirmation of “I will be with you eternally.” And he left us his image in the Shroud of Turin so we could be assured of his real presence forever!

There has been a great deal of literature recently concerning why has Christianity succeeded. Why has it lasted for 2000 years? There are a great number of reasons that have been given but the overwhelming basic reason begins with the fascination of Jesus in his ministry on earth, his passion, death, and perhaps the greatest feature was his Resurrection. His disciples were not familiar what Resurrection was but didn't take long to recognize that Jesus was more than a leader, prophet, and teacher and agreed with the Apostle Thomas when he proclaimed that Jesus was "my Lord and my God." The apostles were now confronted with an entirely new reality, far beyond the limits of their experience.

Three disciples on their way down from the mountain of the Transfiguration were puzzled when Jesus said that the soul of man would "rise from the dead". And they asked one another what "rising from the dead" could possibly mean. They had witnessed the raising of Jarius' daughter and also Lazarus. But it was not the same as "rising from the dead" that Jesus had referred to. So we have three events where God (Jesus) raised someone from death under different conditions. We also have information from a fourth situation that helps formulate the raising of Jesus, namely, the burial cloth of Jesus. Additionally, we have information on the Transformation of Jesus on Mount Tabor. For the raising of Jarius' daughter (Mark 5:4), Jesus held her hand and said "little girl, I say to you arise!" The girl, a child of twelve, her breath returned and she arose immediately and she walked around. Jesus provided some information about the resurrection of the dead in Matthew's Gospel (Matt 22:31-33). He said "And concerning the resurrection of the dead, have you not read what was said to you by God. I am the God of Abraham, the God of Isaac, and the God of Jacob? He is not the God of the dead but of the living."

At the Transfiguration on Mount Tabor, Jesus had invited Peter, James and John to go up the mountain to pray with him. While he was praying, he was transfigured before them; his face shone like the sun and his clothes became dazzling white as light. And behold Moses and Elijah appeared in glory and spoke of his departure (Exodus) that he was going to accomplish in Jerusalem. Jesus' face is not merely illuminated but it shines forth with his own light (not reflected light) and light does not envelop Jesus from without but from within him. His face reflects not merely the glory of God, but also his own glory. More precisely, he is resplendent with his own glory, the very glory of God, because he is the radiance of God's glory and the

exact imprint of God's own being (Hebrews 1:3). On Tabor, Jesus is not doing something he is not but demonstrating exactly who he was and allows his disciples to see a moment of intimacy between himself and his heavenly Father. Jesus is not performing or acting a part before his disciples but allowing them to witness the loving relationship of Father and Son.

The cloud in the Transfiguration is similar to what the dove is at baptism; the visible sign of the Holy Spirit. The very light that shines forth from Christ is the Holy Spirit that dwells in his flesh. Jesus was resurrected from the dead according to the spirit of holiness to become the Son of God (Romans 1:1-5). The Holy Spirit is present when God speaking out of the cloud proclaims, "this is my son, my chosen; listen to him!" (Luke 9:35). From this statement we learn that Jesus is the complete expression of the Father's will. Jesus is not merely the new mediator of God's revelation but the complete self-revelation of God to human beings. Essentially, God is entrusting Jesus to make any new revelation for us in the future. Jesus prefigures and anticipates in the Transfiguration the glorification that will occur in his resurrection. The Transfiguration is the mother of all icons in the sense that the same light that shone forth on Tabor should be reflected on all icons.

Ultimately, we must peruse through what information we have accumulated concerning the resurrection of Jesus. We will add one additional parameter that can aid in the study of the resurrection of Jesus and that is the burial cloth of Jesus, now named "the Shroud of Turin." The burial cloth that was bought by Joseph of Arimathea was about 14.5 feet in length and 5.5 feet wide. Nicodemus brought in ~100 pounds of myrrh and aloes. Somehow Jesus had befriended these two so they could be available for this event and it allows me to reiterate a rather salient but nevertheless recurring theme that Jesus was "the master of his own destiny." Recent depictions of Jesus' injuries to his body are very harsh and leave him totally disfigured but since Jesus knew that his image was imprinted on his burial shroud he was in control of how he wanted to be remembered and the image on the shroud shows every injury to his body but over that he seemed to be quite peaceful and even serene. That is how he wanted his features to be publicly seen in the future. Every lash, physical blow, bruises from carrying the cross, nails that had been driven into his wrists and feet, the crown of thorns, final thrust of a spear through his right side are all included and featured in his whole body image but he is still quite peaceful and not disfigured. He was placed in the tomb on a single large burial cloth that had never been used

and placed in a tomb that also had never been used. This was in keeping with other events such as Jesus riding in the final procession into Jerusalem on a colt which had never been ridden. Jesus established the conditions that would allow an atmospheric inversion that would last 34-36 hours so the alpha decay particles according to the Alpha-Particle Irradiation hypothesis would produce the image he anticipated by having not one but two earthquakes and establishing the conditions in the tomb for a three-dimensional and negative image to be completed. Just the right fluence of Alpha-particles were established. The Alpha-Particle Irradiation Hypothesis is the only means to produce an image with a resolution of sub- microns. All this and more is in keeping with Jesus' master of his own destiny theme! Jesus endured a very harsh punishment but his demeanor seemed to be one of peace and serenity with a majestic outlook. The burial cloth totally covered the body of Jesus but the resurrection of Jesus incorporated the Holy Spirit and so for a body to pass through and deflate the cloth would require dematerialization followed by a re-materialization so Jesus could be flesh and bones again. He did this during his life on earth and it was no problem then so it did not seem to be a problem at his resurrection especially since he may have had help from the Father and the Holy Spirit.

Jesus has been portrayed as being married to Mary of Magdala but this is infinitely unlikely since he was always the Second Person of the Trinity and took very seriously that the Father had "sent" him on a definite mission with a much, much higher calling than to be married on earth for a limited time. In John's Gospel, he referred to being "sent" by his Father at least 33 times and this indicates how important it was when his "hour" became evident. God "sent" his only Son into the world so that we might live through him, with him and in him, especially for the poor and disenfranchised. I don't think he had the time or the need to be married.

It's a curiosity that the images on the Shroud of Turin were generated starting at Jesus' burial and ending at his resurrection which was a time span of 34 to 36 hours. The article entitled "Over 100 Facts/Reasons That Show the Shroud is the Burial Cloth of Jesus" ties the dating of images on the cloth to the actual event. We might ask why after 2000 years we can view the images with great clarity with newly developed high powered spectral and mass microscopy. We can wonder if Jesus was the source of making this happen so these images would be an icon that renewed greater interest in the marvel of the passion, crucifixion and resurrection. It certainly renews our memory of his unlimited love and passion for us!