

# Relics and Conflicts of Religious Interest: The Shroud of Turin and the Blood of Saint Januarius

Giovanni Fazio<sup>1</sup>, Bruno M. Strangio<sup>2</sup>, Francesca Riotto<sup>3</sup>

<sup>1</sup>Department MIFT, University of Messina, Messina, Italy

<sup>2</sup>Multidisciplinary Department MCO, University of the Campania, Napoli, Italy

<sup>3</sup>Diocese of Oppido Mamertina-Palmi, Reggio Calabria, Italy

Email: giovanni.fazio@unime.it

**How to cite this paper:** Fazio, G., Strangio, B. M., & Riotto, F. (2025). Relics and Conflicts of Religious Interest: The Shroud of Turin and the Blood of Saint Januarius. *Open Journal of Social Sciences*, 13, 78-84.

<https://doi.org/10.4236/jss.2025.132005>

**Received:** January 9, 2025

**Accepted:** February 14, 2025

**Published:** February 17, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution-NonCommercial International License (CC BY-NC 4.0).

<http://creativecommons.org/licenses/by-nc/4.0/>



Open Access

---

## Abstract

In this paper, we aim to highlight the barriers to knowledge when investigating relics. This occurs because these objects interest different groups (Christians, Agnostics, Atheists, and followers of other religions) each approaching the topic with their own set of beliefs. The cultures, ideas and behaviors of these groups differ significantly, making it difficult to address any problem objectively. In other words, when faced with a problem, multiple answers arise, each shaped by different perspectives. We will examine two relics that we have studied extensively: the Shroud of Turin, housed in Guarini's Chapel, and the Blood of Saint Januarius, Bishop of Benevento, preserved in the Cathedral of Naples. Through this examination, we aim to highlight some of the religious conflicts surrounding these objects. The outcome of such studies will depend on the statements and actions of the conflicting parties involved.

## Keywords

Relics, Turin Shroud, Saint Januarius's Blood, Christians, Atheists, Agnostics, Other Religions, Religious Conflicts

---

## 1. Introduction

When writing about the Turin Shroud, Saint Januarius's Blood, or any other relic, we encounter persistent conflicts of religious interest. Unfortunately, these conflicts act as barriers to uncovering the Truth. There is one Truth that must be uncovered through experiments, theories, and logical analysis. Therefore, our goal is to minimize the negative effects these conflicts produce. We will explore these issues based on our previous studies of two important relics of the Roman Catholic

Church: the Shroud of Turin and the Blood of Saint Januarius. These relics provide ample material to achieve our objectives.

This conflict is evident when we observe the behavior of researchers tasked with studying or repairing relics. The pattern is consistent and repetitive: two opposing groups form, each consisting of individuals and research teams. When one group supports a specific interpretation, often aligned with their beliefs, a religious conflict arises. Those with differing ideologies respond with their own research, writings, theories, and interviews with sympathetic media outlets. This dynamic can also occur with reversed roles.

Even we, as researchers of this topic, are not immune to this tension. Every time we write an article, a chapter, or even a single sentence, we struggle to ensure that our scientific reasoning prevails over our personal Catholic Christian beliefs. This is no easy task! Atheists, Agnostics, and followers of other religions do not face these same difficulties. They reject all relics, oppose their presence, and would like to see them disappear. Christians, unfortunately, often overlook or forget the origins of our faith, which are grounded in Revelation and Tradition. In this context, relics have no significance. Whether they are authentic or not does not alter Christian belief.

## 2. The Shroud of Turin

The Shroud of Turin is the most studied archaeological find in the world. It bears an image, with a depth of 200 nm (Fanti, Botella Munoz, Di Lazzaro et al., 2010), of a beaten, flagellated, and crucified man. When the Shroud first appeared in France (around the mid-14th century), it sparked a major religious conflict. Scholars noticed the remarkable similarities between the descriptions of Jesus Christ's Passion in the New Testament and the image on the Shroud. The match was so precise, even down to the smallest details (United States Conference of Catholic Bishops, 2010).

However, other scientists focused on the Shroud's appearance, questioning its authenticity. They noted that, in medieval Western Europe, many false relics were circulating, some brought back by Crusaders and others created by forgers seeking profit.

From the outset, a rift formed among scientists, growing wider as knowledge of the Shroud expanded. This divide persisted, regardless of which side made new discoveries. Consequently, the religious conflict surrounding the Shroud intensified.

Several reasons amplify the religious conflicts related to the Shroud. For example, some Christian scholars claimed that the pollen on the Shroud belonged to plants not found in Europe (*Gundelia tournefortii* and *Zygophyllum dumosum*), suggesting a Middle Eastern origin (Frei, 1976, 1983; Danin & Baruch, 1998; Danin, 2010). An incorrect result (Boi, 2014, 2016). Others pointed to the presence of aloe and myrrh, useful for demonstrating that the Shroud was indeed a genuine burial cloth, despite evidence that substances such as these (thermolabile compounds) should have been destroyed in the 1532 Chambery fire (Baima Bollone, 1983; Baima

Bollone & Gaglio, 1984; Scannerini, 1997). The presence of Roman coins on the Shroud's eyelids, minted by Pontius Pilate (Roman Prefect during the reign of Tiberius) in the first century, was also cited as evidence that the Shroud dates to the time of Christ (Jackson, Jumper, Mottern et al., 1977; Filas, 1981, 1984; Tamburelli, 1985). The presence of Roman coins, as the above scientists maintain, recalls the traces of writings in Greek, Latin and Aramaic identified on the Shroud linen (Frale, 2009). Sometimes you can see what isn't there. This is not considering that Roman coins, present also today, could have been used by a forger in the Middle Ages. This means that if the above traces are there (but they are not) they could be real or due to the action of an artist-forger.

On the opposing side, some scientists argue that the Shroud originated in Europe and dates to the Middle Ages, dismissing the image as a forgery and the blood stains as fabricated before the scientific analyses of the STURP team (The Shroud of Turin Research Projected). Forensic analysis has suggested inconsistencies in the location of the blood stains (Garlaschelli, 2010; Borrini & Garlaschelli, 2019).

However, the origin of the greatest conflict of religious interest arises when the Christian side asserts with certainty that the image on the Shroud is the result of a miracle. The scientists who believe in this formation of the Body Image are primarily located in Italy and the United States. It all began with a paper by Lukasik (1985), in which the scientist proposed that a photochemical reaction could be the process responsible for creating an image like the one on the Shroud.

Some scientists hypothesize that the corpse, wrapped in the burial linen, emits protons, which pass through the linen and remove electrons from its atoms (ionizing the matter they pass through). On a macroscopic level, this action manifests itself as a yellowing of the linen, forming an image (Rinaudo, 1994, 1995; Lind, 2017). Others use ultraviolet radiation with a wavelength of 193 nm (VUV, close to soft X-rays), which, with its energy (6.8 eV), is able to penetrate for 200 nm, the thickness (or depth) of the image (Baldacchini, Di Lazzaro, Murra et al., 2008; Di Lazzaro, Murra, Santoni et al., 2010; Di Lazzaro, Murra, Nichelatti et al., 2012).

Theological considerations alone are enough to discard this hypothesis. However, we will also investigate the interactions of protons and VUV with air and linen to demonstrate that the above hypotheses are unlikely.

The study of particles that pass through matter can be helpful. The energy required for protons to penetrate the linen to a depth of 200 nm is on the order of a few hundred keV. Protons with this energy cannot cross the air over the 3.7 cm of discoloration. To cover this distance in the air, the particles would need an energy of 1.35 MeV, according to the Bethe formula (Bethe & Askin, 1953). Thus, for protons with this energy, the depth of the image would be much greater. The conclusion is that for both the image depth and the discoloration effects (Fazio, 2022b, 2023), it is impossible for any energy level chosen for the protons to satisfy both distances. Therefore, a complete image could not form.

Regarding the use of ultraviolet radiation, we agree with the scientists who support its interaction with linen, as it can penetrate the classic 200 nm when the

appropriate wavelength of vacuum ultraviolet ( $\lambda = 193$  nm, with energy of 6.8 eV) is used (Di Lazzaro et al., 2012). However, there is total disagreement when it comes to the interaction with air. In this case, oxygen, which has a binding energy of  $E = 5.16$  eV, is present. As a result, the radiation quickly penetrates the air for only a few microns. In this situation, it is impossible for ultraviolet radiation to reach the linen in areas not in contact with the body. No image would form (Fazio, 2022a).

As we can see, neither protons nor ultraviolet radiation are capable of forming an image like the one on the Shroud.

In the Shroud Body Image Formation study, many hypotheses were made. The most supported is the radiative one which we have described extensively. However, there are other hypotheses. We will discuss two of these: one is the one proposed by Rogers & Arnoldi (2003), and the other is supported by ourselves (Fazio, Mandaglio, & Anastasi, 2019). Both are natural processes. The Rogers, & Arnoldi hypothesis claims that the Image may have formed through a Maillard Reaction between reducing sugars, left on the burial linen by the manufacturing procedure and amines deriving from the decomposition of the corpse. This hypothesis can explain a color distribution.

Our hypothesis is a stochastic process (Fazio, Mandaglio, & Anastasi, 2019) triggered by the weak transfer of thermal energy from the corpse to the burial linen. This is the only energy present in an ancient tomb. It is a small amount of energy, but precisely because it is small it produces a stochastic effect that will provide results (coloring) after years or decades. In line with the Shroud Image which is a latent image. We thought of this hypothesis because, being Nuclear Physicists, we noticed that the distribution of yellowed fibrils is like the distribution of human beings who died years or decades after undergoing weak irradiation.

However, even today there is no process capable of accounting for all the characteristics of the Shroud of Turin.

### 3. The Blood of Saint Januarius

Although the scientific research on the Blood of Saint Januarius is less extensive than that of the Shroud, religious conflict is still evident. Only a few experiments are documented, but they are sufficient to illustrate the presence of religious tension. Two spectroscopic analyses from different periods, 87 years apart, identified oxidized hemoglobin, confirming the substance is blood (Sperandeo, & Januario, 1902; Baima Bollone, 1989).

A third experiment, conducted by scientists from the CICAP (Italian Committee for the Control of Claims in the Pseudoscience), proposed that the substance in the ampoules was a thixotropic material. A substance that shifts from solid to liquid under agitation. They replicated this behavior using a mixture of calcium carbonate, ferric chloride, table salt, and water (Garlaschelli, Ramaccini, & Della Sala, 1991).

The opposing results of these experiments, conducted by Christian scholars

and the CICAP scientists, further illustrate the deepening conflict. A definitive resolution, due to ideological differences, is not forthcoming.

Recently, we proposed two possible investigations to advance understanding of the non-canonical days. If liquefaction occurs, it would suggest there is no miracle, although we could not comment on the nature of the substance. The second involves comparing the spectroscopic analysis of the CICAP sample with those from 1902 and 1989 to determine if the substance is the work of a forger (Fazio, 2024; Fazio, & Riotta, 2025; Strangio, Riotta, & Fazio, 2025).

#### 4. Conclusion

Both the Shroud of Turin and the Blood of Saint Januarius are surrounded by religious conflicts. The Shroud, due to its extensive study, has sparked more such conflicts than the Blood of Saint Januarius. This article demonstrates the challenges researchers face when investigating Christian relics, where the pursuit of truth is often hindered by ideological and religious conflicts. Unfortunately, these areas of study are prone to conflicting truths, which is unacceptable for the advancement of knowledge.

Therefore, it is crucial that researchers, scholars, and scientists investigating relics adhere to strict scientific rigor, avoiding the influence of personal ideologies and beliefs. This, and only this, we suggest to reduce conflicts. Nothing else can be done.

#### Acknowledgements

We would like to thank Barrie M. Schwartz, a scholar whose work on the Shroud of Turin should always be remembered.

#### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this article.

#### References

- Baima Bollone, P. L. (1983). La presenza della Mirra, Aloe e Sangue sulla Sindone. In *La Sindone. Scienza e Fede. Atti del II Congresso Nazionale di Sindonologia* (pp. 169-174). CLUEB Bologna.
- Baima Bollone, P. L. (1989). *Gennaro e la Scienza*. Società Editrice Internazionale.
- Baima Bollone, P. L., & Gaglio, A. (1984). Demonstration of Blood, Aloes and Myrrh on the Holy Shroud with Immunofluorescence Techniques. *Shroud Spectrum International*, 13, 3-8.
- Baldacchini, G., Di Lazzaro, P., Murra, D., & Fanti, G. (2008). Coloring Linens with Excimer Lasers to Simulate the Body Image of the Turin Shroud. *Applied Optics*, 47, 1278-1285. <https://doi.org/10.1364/ao.47.001278>
- Bethe, H., & Askin, J. (1953). *Experimental Nuclear Physics*. Wiley.
- Boi, M. (2014). Pollen Attachment in Common Materials. *Aerobiologia*, 31, 261-270. <https://doi.org/10.1007/s10453-014-9362-2>
- Boi, M. (2016). Pollen on the Shroud of Turin: The Probable Trace Left by Anointing and

- Embalming. *Archaeometry*, 59, 316-330. <https://doi.org/10.1111/arcm.12269>
- Borrini, M., & Garlaschelli, L. (2019). A BPA Approach to the Shroud of Turin. *Journal of Forensic Sciences*, 64, 137-143. <https://doi.org/10.1111/1556-4029.13867>
- Danin, A. (2010). *Botany of the Shroud: The Story of Floreal Images on the Shroud of Turin*. Danin Publishing.
- Danin, A., & Baruch, U. (1998). *Floristic Indicators for the Origin of the Shroud of Turin*. <https://shroud.com/pdfs/daninx.pdf>
- Di Lazzaro, P., Murra, D., Nichelatti, E., Santoni, A., & Baldacchini, G. (2012). Superficial and Shroud-Like Coloration of Linen by Short Laser Pulses in the Vacuum Ultraviolet. *Applied Optics*, 51, Article 8567. <https://doi.org/10.1364/ao.51.008567>
- Di Lazzaro, P., Murra, D., Santoni, A., Fanti, G., Nichelatti, E., & Baldacchini, G. (2010). Deep Ultraviolet Radiation Simulates the Turin Shroud Image. *Journal of Imaging Science and Technology*, 54, 40302-1-40302-6. <https://doi.org/10.2352/j.imagingsci.technol.2010.54.4.040302>
- Fanti, G., Botella Munoz, J. A., Di Lazzaro, P. et al. (2010). Microscopic and Macroscopic Characteristics of the Shroud of Turin Image Superficiality. *Journal of Imaging Science and Technology*, 54, Article 40201. <https://doi.org/10.2352/j.imagingsci.technol.2010.54.4.040201>
- Fazio, G. (2022a). Could the VUV Radiation Yield the Shroud Body Image? *Global Journal of Archaeology & Anthropology*, 12, 1-3. <https://doi.org/10.19080/gjaa.2022.12.555837>
- Fazio, G. (2022b). The Body Image on the Shroud Was Not Produced by Protons. *Scientific Culture*, 8, 17-21.
- Fazio, G. (2023). Discoloration Range and Shroud Image Depth Values Cannot Be Satisfied by the Same Proton Energy. *Open Journal of Applied Sciences*, 13, 1224-1232. <https://doi.org/10.4236/ojapps.2023.138096>
- Fazio, G. (2024). About the Blood of Saint Januarius. *Japan Journal of Research*, 5, Article 87. <https://doi.org/10.33425/2690-8077.1158>
- Fazio, G., & Riotto, F. (2025). Shroud of Turin and Blood of Saint of Saint Januarius: Two Relic Compared. *Japan Journal of Research*, 6, Article No. 100.
- Fazio, G., Mandaglio, G., & Anastasi, A. (2019). Describing, Step by Step, the Shroud Body Image Formation. *Heritage*, 2, 34-38. <https://doi.org/10.3390/heritage2010003>
- Filas, F. L. (1981). The Shroud of Turin: Roman Coins and Funerary Customs. *The Biblical Archaeologist*, 44, 135-137. <https://doi.org/10.2307/3209600>
- Filas, F. L. (1984). *The Dating of the Shroud of Turin from Coins of Pontius Pilate*. Cogan Productions.
- Frale, B. (2009). *La Sindone di Gesù Nazareno*. Società Editrice il Mulino.
- Frei, M. (1976). Note a seguito dei primi studi sui prelievi di polvere aderente al lenzuolo della S. Sindone. *Sindon*, 23, 5-9.
- Frei, M. (1983). Identificazione e Classificazione dei nuovi pollini della Sindone. In *La Sindone Scienza e Fede. Atti del II Congresso Nazionale di Sindonologia* (pp. 277-284). CLUEB Bologna.
- Garlaschelli, L. (2010). Life-Size Reproduction of the Shroud of Turin and Its Image. *Journal of Imaging Science and Technology*, 54, 137-143. <https://doi.org/10.2352/j.imagingsci.technol.2010.54.4.040301>
- Garlaschelli, L., Ramaccini, F., & Delia Sala, S. (1991). Working Bloody Miracles. *Nature*, 353, Article 507. <https://doi.org/10.1038/353507a0>
- Jackson, J. P., Jumper, E. J., Mottern, B. et al. (1977). The Three Dimensional Image on

- Jesus Burial Cloth. In *Proceeding of the 1977 United States Conference of Research on the Shroud of Turin* (pp. 74-97). Holy Shroud Guild.
- Lind, A. C. (2017). Image Formation by Protons. In *International Conference on the Shroud of Turin. Seeking Solution to the Mysteries of the Shroud* (pp. 1-12). Shroud Research Network.
- Lukasik, S. J. (1985). *Some Speculations Concerning the Process Leading to the Formation of the Image on the Shroud of Turin*. <https://shroud.com/pdfs/lukasik1985.pdf>
- Rinaudo, J. B. (1994). Protons Model. *British Society for the Turin Shroud. Newsletter*, 38, 13-16.
- Rinaudo, J. B. (1995). Nouveau Mecanisme de formation de l'Image sur le Linceul de Turin, ayant pur entrainer une fausse radiodation medieval. L'Identification Scientifique de l'Homme du Linceul, Jesus de Nazareth. In *Acts du Symposium Scientifique International sur le Linceul de Turin* (pp. 293-299). F. X. de Guibert.
- Rogers, R. N., & Arnoldi, A. (2003). The Shroud of Turin: An Amino-Carbonyl Reaction (Maillard Reaction) May Explain the Image Formation. *Melanoidins*, 4, 106-113.
- Scannerini, S. (1997). *Mirra, aloe, pollini e altre tracce. Ricerca Botanica sulla Sindone*. Editrice Elledici.
- Sperandeo, G., & Januario, R. (1902). *Il Miracolo di S. Gennaro e la Scienza*. Napoli.
- Strangio, M. B., Riotta, F., & Fazio, G. (2025). It's Time to Entrust Saint Januarius's Blood to Microchemistry. *Japan Journal of Research*, 6, Article 104.
- Tamburelli, G. (1985). L'Impronta Sindonica della Moneta Rilevata dal Computer. *Sindon*, 44, 15-20.
- United States Conference of Catholic Bishop (2010). *New American Bible. Revised Edition*. Confraternity of Christian Doctrine Inc.