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Tristan Casabianca¹

Do we really need new evidence and arguments about the Turin Shroud?

Abstract. Since the 2000s, the discussion about the authenticity of the Shroud of Turin has been reopened in mainstream scientific journals. Over the last few years, new global arguments taking into account the ongoing controversy have been introduced. This paper argues that the dozens of recent scientific articles reinforcing the authenticity hypothesis and the development of analytical arguments show that the belief in the authenticity of the Turin Shroud is justified. But, even if new evidence and arguments are crucial in order to show what a reasonable answer should be, human beings can always, as free agents, hold unwarranted doubts and beliefs.

The Turin Shroud (TS) has been called one of the most studied and controversial artifacts in human history. The first photographs taken in 1898 by Turinese photographer Secondo Pia mark the beginning of the scientific history of this piece of fabric. More than a century later, the vivid controversy goes on. This controversy mainly focuses on a single question: is the Turin Shroud authentic?

How could we know with a sufficient level of certainty whether the Shroud is authentic or medieval? In this specific case, the notion of authenticity is ambiguous. Many arguments for or against the authenticity of the TS have been produced over the last century. Some scientific articles and popular books are very clear about their meaning of authenticity: “the authentic burial cloth of Christ”², “the hypothesis that TS man is Jesus of Nazareth”³, etc., others are not. One must distinguish between all the potential meanings and nuances of the so-called “authenticity”, including but not limited to: is the TS an antique piece of cloth (i.e. before the Middle Ages)? Is the TS a first-century piece of cloth? Is the TS the burial shroud of Jesus of Nazareth? Does the TS bear the imprint of Jesus’s resurrection? In contrast, all the potential meanings of a medieval piece of cloth appeared much more restrained, due in part to the disappearance of the supernatural possibility.

The history of the interdisciplinary arguments for or against the authenticity goes back to the beginning of the twentieth century. The very first argument given against the authenticity of the TS is a simple one. It is based on the memorandum of Bishop Pierre d’Arcis, who claims that the forger was known by his predecessor, Henri de Poitiers.⁴ But, at the very same time, more complex arguments in favor of the authenticity are produced. Yves Delage (1854-1920), professor of zoology and biology, and his assistant Paul Vignon (1865-1943), think after months of research that they can explain the image formation process: the TS is not a medieval piece of fabric, and it is indeed the burial cloth of Jesus. In

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² (Sheridan, 2014).

³ (Bevilacqua, Fanti, D’Arienzo, & De Caro, 2013)

⁴ (Chevalier, 1899)

1902, Paul Vignon publishes his scientific study of the TS.⁵ A controversy immediately appears between Vignon and Delage on one side, and on the other side Maurice Vernes (1845-1923), professor of history of religions, and the chemist Marcellin Berthelot (1827-1907).⁶ Eight years after the photograph taken by Giuseppe Enrie in 1931, Paul Vignon publishes a new book on the topic, in which he tries to build a global case in favor of the authenticity.⁷

More than forty years later after Vignon's book, the scientific studies lead by the Shroud of Turin Research Project (STURP) point to the conclusion that the image was not the product of a medieval artist. This conclusion, given in a press release which even describes the image formation process as an ongoing "mystery",⁸ was much more an educated and unavoidable guess than a strict reasoning in an analytical process. However, the STURP assertions were seriously challenged by the 1988 radiocarbon dating, even if the medieval interval published in *Nature* left unanswered the question of the image formation process.⁹ The results of the 1988 dating reversed the trend and proponents of an antique linen cloth were classified as a fringe group.

Since the 2000's the trend has reversed again. The validity of the medieval conclusion is increasingly contested in peer-reviewed journals of history, statistics, and chemistry. An analysis of all articles on the TS published in English and in French since 2000 in mainstream peer-reviewed journals (not open-access journals) clearly shows that the elements in favor of the authenticity have become predominant. Although such a classification is always difficult and arbitrary, between 2000 and 2015, approximately 30 articles and letters conducted analyses and contained elements that reinforced the authenticity, whereas 6 provided analyses and contained elements that reinforced the medieval hypothesis; 11 remained neutral (cf. Annex 1).

Of course, this census cannot put an end to the controversy. This census does not take into consideration the impact factor of the journals, it does not take into consideration the difference between seminal contributions and low-cited articles, between research articles and review articles. Peer-reviewed books in archaeology and chemistry published by scientific publishers are also excluded from this census, but it is a safe bet to say that a clear majority of their authors think that the TS is of medieval origin. For example, the treatment of the Turin Shroud in the second edition of *Radiocarbon Dating, An Archaeological Perspective* published by Routledge in 2016 is partial and outdated. The authors give undue weight to Kuznetsov but do not even mention the latest peer-reviewed articles in statistics, chemistry and history contesting the validity of *Nature's* medieval interval.¹⁰

To sum up, this census indicates only that there are some viable elements and arguments in favor of the authenticity that must be considered by researchers. The discussion has been reopened in mainstream science. A confirmation of this indication given by the census is given by the two recent cautious publications in *Scientific Reports* and *Nature Materials*, two peer-reviewed journals of the *Nature* Group.¹¹ The conclusion of Philip Ball's editorial in the issue of May 2017 of *Nature Materials* is significant: "Let the arguments begin".

⁵ (Vignon, *Le linceul du Christ, étude scientifique*, 1902).

⁶ (Vernes, *Le Saint Suaire de Turin*, 1902) ; (Vernes, *Le Saint Suaire de Turin, Réponse à M. P. Vignon*, 1902). (Vignon, *Réponse à M. Vernes*, 1902)

⁷ (Vignon, *Le Saint-Suaire de Turin, devant la science, l'archéologie, l'histoire, l'iconographie, la logique*, 2ème édition enrichie, 1939)

⁸ (STURP, 1981)

⁹ (Damon & al., 1989)

¹⁰ (Taylor & Bar-Yosef, 2016, pp. 162-9)

¹¹ (Barcaccia & al., 2015) ; (Ball, *Is This Holy Relic Preserved?*, 2017).

Arguments about the TS are also a “challenge to our intelligence”. Just a couple of months after the 1988 radiocarbon dating, some philosophers and historians still argued in favor of authenticity. In 1990, French mathematician Arnaud-Aaron Upinsky, probably inspired by Paul Vignon, tried to methodically demonstrate with an “epistemological table” that the results of the C14 dating were necessarily incorrect.¹² However, Upinsky’s epistemological table generally suffers from the lack of reliability of the sources.

Other methods have been proposed over the last two decades, generally by partisans of the authenticity, such as probabilistic models or judicial trials. Considering the 7 most prominent correspondences between the TS man and the Jesus crucified of the Gospels, Bruno Barberis found that the probability that the image was due to chance was less than 1/1000.¹³ According to another calculus made by Giulio Fanti, “the probability that the artist has fortuitously got that particular result are seven chances in one billion of billions”.¹⁴ The conclusion of these mathematical arguments is not so much that the TS man is Jesus of Nazareth crucified, but much more that if there was a forger or an artist, then he wanted to reproduce Jesus’s crucifixion.

Over the last few years, two new systematic approaches have been proposed. The first one is a minimal facts approach which applies traditional historiographical criteria to assess which hypothesis relating to the image formation process is the most likely. This historiographical approach concludes that the image formation process is best explained by the Resurrection hypothesis. On the contrary, an argument diagram of the Turin Shroud case has recently been introduced. The argument diagram offers a visual representation of the structure of the ongoing controversy. The author of this diagram argues in favor of the Medieval Hypothesis.

The historiographical approach is based on traditional historical criteria.

“Historical criteria do not fall from the sky; they are part of a slowly-built-up methodology routinely used by historians, whatever may be their opinion on the subject being discussed. This article will use criteria specified by Christopher Behan McCullagh.² One can list these in order of priority from the most important to the least; this list, while not written in stone, provides a general idea of the most important conditions to satisfy. Thus one has: 1) plausibility: does our knowledge in other well-known fields support or reinforce the hypothesis? 2) Explanatory scope: can the hypothesis do justice to all the facts? 3) Explanatory power: the hypothesis has to be specific and accurate, rather than ambiguous. 4) Less ad hoc: *ceteris paribus*, the hypothesis should not invoke or rely on unverified data (this includes the criterion of simplicity). 5) Illumination: does the hypothesis shed light on other widely accepted phenomena?”¹⁵

This approach is a “Minimal Facts Approach”. The purpose of this approach is to assess, based on “unquestionable facts”, the three main hypotheses about the TS: the medieval hypothesis as proposed by Luigi Garlaschelli,¹⁶ the natural hypothesis (an image formation process without predominant human and divine intervention, in first-century Palestine), and the Resurrection Hypothesis. The conclusion is unambiguous (cf. table 1). According to this historiographical approach, the medieval hypothesis should be discarded. Contrary to Upinsky’s table and to the probabilistic approaches, the Minimal Facts Approach does not even consider that the TS wrapped a body. In a topic as controversial

¹² (Upinsky, 1990, p. 169).

¹³ (Barberis & Savarino, 1997)

¹⁴ (Fanti & Malfi, 2016, pp. 372-4)

¹⁵ (Casabianca, 2013)

¹⁶ (Garlaschelli, 2010)

as the TS, this Minimal Facts Approach just takes into consideration the facts that are subject to the widest consensus among scholars. For instance, the presence of real human blood was not considered as an unquestionable fact. This approach also leads to the exclusion of the 1988 radiocarbon dating, which become controversial since 2005. Thus, this Minimal Facts Approach is also open to criticism and is just one among others.

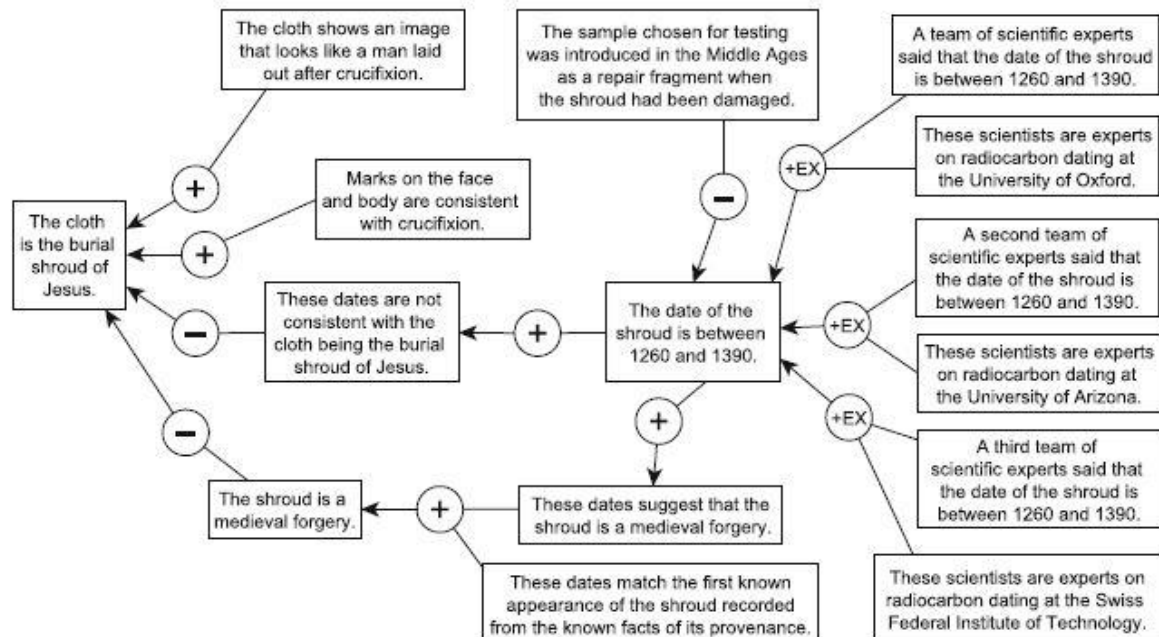
Table 1 Minimal Facts Approach of the TS (Casabianca, 2013)

	Plausibility	Explanatory Scope	Explanatory Power	Less <i>ad hoc</i>	Illumination
Garlaschelli Hypothesis	F	F	F	F	F
Resurrection Hypothesis	P	P (with reservations)	F	P	P
Natural Hypothesis	F	P (with reservations)	P	F	F

F = Fails; P = Passes.

In 2016, Douglas Walton, Professor at the University of Windsor, Canada (Centre for Research in Reasoning, Argumentation and Rhetoric), provided a new analytical argument. At the beginning of his new book, *Argument Evaluation and Evidence*, Walton used the controversy about the TS as a basic example for showing how to solve a controversial case with an argument diagram (cf. Figure 1).¹⁷

Figure 1 Douglas Walton's argument diagram of the TS case



¹⁷ (Walton, 2016, pp. 7-12).

Walton's argument diagram supports the conclusion that the TS is a medieval forgery. The argument diagram must be read from right to left.

As explained by Walton,

“the ultimate claim that is at issue in the dispute is represented in the text box at the far left of the diagram. The proposition in the text box states that the cloth is the burial shroud of Jesus. The arguments displayed to the right of this textbox all lead by sequences of arrows into the single proposition. The arguments are represented by the circles, and some information about the nature of the argument is contained by notation within each circle.”¹⁸

It should be emphasized that Walton's ambition is only to present a “realistic enough case, despite its incompleteness, to give the reader some idea of how an argument diagram can be used to represent the structure of argumentation in any given text of discourse.”¹⁹ However, this “realistic enough case” immediately appears deeply misleading to the shroud scholar. First, Walton makes some factual errors in the description of the case. He explains that the “presence of the shroud in Turin, Italy, was attested to in the fourteenth century”, when the TS was actually in Lirey, France. He also writes that the radiocarbon dating was made “in 1980”, instead of 1988, or that some claimed that the C14 experts tested “a fragment of the shroud that could have been introduced in the Middle Ages”, instead of the French Renaissance (after the fire in Chambéry in 1532). These factually incorrect statements show a lack of familiarity with the topic.

More problematic are in Walton's diagram the text boxes about the 1988 radiocarbon dating. At the far right, Walton presents the C 14 tests as if the interval of 1260-1390 obtained by the laboratories of Oxford, Zürich and Tucson was each time identical. Here, Walton makes a confusion between the general conclusion of the article published in *Nature* and the three distinct intervals. According to Walton, the “carbon dating tests were carried out independently of each other, and so the three arguments as a group present significant evidence supporting the claim that the date of the shroud is between 1260 and 1390.”²⁰ Therefore, the argumentation map is misleading because it gives the impression of three independent confirmations.

Walton, in the description of his case, takes into account the con argument of the Chambéry repair. But in his diagram, this argument is not based on an expert opinion. Walton goes as far as saying that “if some evidence for [the repair hypothesis] were given, for example based on expert opinions of scientists who had examined the shroud in the repair fragment, it could be a very strong counterargument, and might defeat the network of pro-arguments supporting the ultimate claim at issue.”²¹ Therefore, the articles published by Rogers and the robust statistical analysis made by Riani and Atkinson could constitute this “very strong counterargument”.²² Moreover, the text box about the marks on the face and body “consistent with the crucifixion” should also be based on experts, reinforcing the credibility of the ultimate claim.²³

Thus, it appears that an imperfect knowledge of the latest scientific publications combined to an oversimplification have led to the main argument diagram erroneous conclusion. Once corrected, a case in favor of the so-called authenticity can also be built with the argument diagram. Even if the

¹⁸ (Walton, 2016, p. 9).

¹⁹ (Walton, 2016, p. 8).

²⁰ (Walton, 2016, p. 10)

²¹ (Walton, 2016, p. 11)

²² (Rogers, 2005); (Riani & al, 2013).

²³ (Bevilacqua & al., Do we really need new medical information about the Turin Shroud?, 2014) ; (Bevilacqua & al., How was the Turin Shroud Man crucified?, 2014)

corrected argumentation diagram is still less favorable to the TS authenticity than Upinsky's epistemological table, the probabilistic methods and the Minimal Facts Approach, it no more enters in direct contradiction with them.

The number of recent scientific articles reinforcing the authenticity hypothesis and the development of analytical arguments indicate that the belief in the authenticity of the TS is justified. The TS could and should be part of a concrete argument for the Resurrection of Jesus. It should be part of an interdisciplinary 'argument from miracle', as defined by Robert Larmer, as an argument that "must be understood as genuinely interdisciplinary, inasmuch as it presupposes the involvement of historians, archeologists, linguists and a host of other specialists that is necessary if the relevant data is to be critically engaged with in necessary detail".²⁴

But, what if this argument from miracle points to an overwhelming evidence for the Resurrection? Contrary to a commonly held opinion among believers (and shroud scholars), a hypothetical ultimate proof in favor of the Resurrection hypothesis does not constitute a contradiction or a danger for the life of faith. This argument is not pertinent both on a theological level and on a much more practical level. On a practical level, scientific or historical certitudes do not prevent someone from holding extravagant opinions, such as the young earth theory, the Christ myth theory, the substitution of Jesus before his crucifixion, etc.

On a theological level, one has to distinguish the sure knowledge of the existence of God from the essence of the Christian faith, that is to say, the free response to God's commands. To be sure of the existence and transcendence of the Resurrected Jesus is a necessary but not sufficient condition to have a Christian life. The devil is also convinced of the existence of Jesus. Nevertheless, by his constant wrong use of his personal freedom, the devil is opposed to the will of his Creator. This possibility of a free response in front of a miraculous event is, of course, visible in the Gospels, for example in the Gospel of John: "For even his own Brothers did not believe in him" (Jn 7:5), "Even after Jesus had performed so many signs in their presence, they still would not believe in him" (Jn 12:37).

We can also address the classical thought experiment: if the stars were to form the sentence "God exists" in the sky, would you still be an atheist/agnostic?²⁵ The former *Nature* editor Philip Ball has recently given his own hierarchy of explanations:

"it is a hoax or weird illusion; I have lost my mind; it is aliens; it is the Supreme Being saying hello. I have no problem of principle with working my way through that progression. Yes, I'm open to persuasion that God exists and that Christ rose from the dead and left his imprint in a cloth through supernatural means. Which rational person could not be?"²⁶

An overwhelming evidence in favor of the authenticity, and in favor of the Resurrection of Jesus, could lead to the same type of reaction among non-believers and agnostics. As shown by Walton's diagram, in a heuristic approach of the TS, the results of the 1988 radiocarbon dating play a crucial role. For a clear majority of scholars, the *Nature's* article remains a straightforward disproof,²⁷ even if the validity of the test has been more and more frequently put into question. New evidence and arguments are crucial in order to show what a reasonable answer should be, and "where the conflict really lies".²⁸ But

²⁴ (Larmer, 2013).

²⁵ (Casabianca, forthcoming)

²⁶ (Ball, Do you believe in miracles?, 2017)

²⁷ (Ball, Is This Holy Relic Preserved?, 2017)

²⁸ (Plantinga, 2011)

in one sense or another, we can, as free agents, always hold unwarranted doubts or beliefs, even in front of valid arguments and clear evidence.

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Annex 1

Year	Reinforcing the antique origine	Neutral	Reinforcing the medieval origine
2000		<ul style="list-style-type: none"> • Bryant, <i>BAR</i>ⁱ 	
2001	<ul style="list-style-type: none"> • Pochon, <i>Etudes</i>ⁱⁱ 		
2002	<ul style="list-style-type: none"> • Fanti, Moroni, <i>JIST</i>ⁱⁱⁱ 		
2003	<ul style="list-style-type: none"> • Rogers, Arnoldi, <i>Melanoidins in Foods and Health</i>^{iv} 		
2004	<ul style="list-style-type: none"> • Fanti, <i>Journal of Optics A</i>^v 		
2005	<ul style="list-style-type: none"> • Rogers, <i>Thermochimica Acta</i>^{vi} 	<ul style="list-style-type: none"> • Ball, <i>Nature</i>^{vii} 	<ul style="list-style-type: none"> • Loyson, <i>South African Journal of Science</i>^{viii} • Evin, <i>Les dossiers d'archéologie</i>^{ix}
2006	<ul style="list-style-type: none"> • Poulle, <i>Revue d'histoire de l'Eglise de France</i>^x 	<ul style="list-style-type: none"> • Friedlander, <i>The Journal of Ecclesiastical History</i>^{xi} 	
2007	/	/	/
2008	<ul style="list-style-type: none"> • Baldacchini, <i>Applied Optics</i>^{xii} • Benford, <i>Chemistry Today</i>^{xiii} • Benford, <i>Chemistry Today</i>^{xiv} 	<ul style="list-style-type: none"> • Ball, <i>Nature Materials</i>^{xv} 	
2009	<ul style="list-style-type: none"> • Flury-Lemberg, <i>Conserving Textiles</i>^{xvi} • Poulle, <i>Revue d'histoire ecclésiastique</i>^{xvii} 		
2010	<ul style="list-style-type: none"> • Fanti, <i>JIST</i>^{xviii} • Lazzaro, <i>JIST</i>^{xix} • Fanti, Basso, <i>JIST</i>^{xx} • Fazio, Mandaglio, <i>Radiation Effects and Defects in Solids</i>^{xxi} 		<ul style="list-style-type: none"> • Garlaschelli, <i>JIST</i>^{xxiii} • Freer-Waters, <i>Radiocarbon</i>^{xxiv}

	<ul style="list-style-type: none"> • Fanti et alii, <i>JIST</i>^{xxii} 		
2011	<ul style="list-style-type: none"> • Fanti, Heimburger, <i>JIST</i>^{xxv} • Fanti, <i>JIST</i>^{xxvi} • Fazio, <i>REDS</i>^{xxvii} 	<ul style="list-style-type: none"> • Lorusso, <i>Conservation Science in Cultural Heritage</i>^{xxviii} • Habermas, <i>Encyclopedia of Christian civilization</i>^{xxix} 	
2012	<ul style="list-style-type: none"> • Curciarello, <i>REDS</i>^{xxx} • Fazio, Mandaglio, <i>REDS</i>^{xxx1} 	<ul style="list-style-type: none"> • Lazzaro, <i>Pattern Recognition</i>^{xxxii} 	
2013	<ul style="list-style-type: none"> • Casabianca, <i>Heythrop Journal</i>^{xxxiii} • Riani, <i>Statistics and Computing</i>^{xxxiv} 	<ul style="list-style-type: none"> • Kears, <i>Theology and Science</i>^{xxxv} 	
2014	<ul style="list-style-type: none"> • Bevilacqua, <i>Injury</i>^{xxxvi} • Fazio, <i>Mediterranean Archaeology and Archaeometry</i>^{xxxvii} • Bevilacqua, <i>Injury</i>^{xxxviii} 	<ul style="list-style-type: none"> • Caja, <i>Injury</i>^{xxxix} • Latendresse, <i>MAA</i>^{xl} 	
2015	<ul style="list-style-type: none"> • Fazio, <i>Chemistry Today/Chimica Oggi</i>^{xli} • Fazio, <i>Journal of The Textile Institute</i>^{xlii} • Fazio, <i>Journal of the Textile Institute</i>^{xliii} • Fanti, <i>Journal of the Textile Institute</i>^{xliv} 	<ul style="list-style-type: none"> • Barcaccia, <i>Scientific Reports</i>^{xlv} 	<ul style="list-style-type: none"> • Bella, <i>Thermochimica Acta</i>^{xlvi} • Jordan, <i>Plos One</i>^{xlvii}

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- ⁱ <https://members.bib-arch.org/biblical-archaeology-review/26/6/2>
- ⁱⁱ <http://www.cairn.info/revue-etudes-2001-4-page-497.htm%20>
- ⁱⁱⁱ <http://www.ingentaconnect.com/content/ist/jist/2002/00000046/00000002/art00009>
- ^{iv} <https://www.shroud.com/pdfs/rogers7.pdf>
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- ^x doi.org/10.1484/J.RHEF.2.304979
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- ^{xiv} <http://www.refdoc.fr/Detailnotice?idarticle=328545>
- ^{xv} [doi:10.1038/nmat2170](https://doi.org/10.1038/nmat2170)
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- ^{xviii} doi.org/10.2352/J.ImagingSci.Technol.2010.54.2.020508
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- ^{xx} doi.org/10.2352/J.ImagingSci.Technol.2010.54.5.050503
- ^{xxi} doi.org/10.1080/10420151003716844
- ^{xxii} doi.org/10.2352/J.ImagingSci.Technol.2010.54.4.040201
- ^{xxiii} doi.org/10.2352/J.ImagingSci.Technol.2010.54.4.040301
- ^{xxiv} doi.org/10.1017/S0033822200056277
- ^{xxv} doi.org/10.2352/J.ImagingSci.Technol.2011.55.2.020102
- ^{xxvi} doi.org/10.2352/J.ImagingSci.Technol.2011.55.6.060507
- ^{xxvii} doi.org/10.1080/10420150.2011.566877
- ^{xxviii} doi.org/10.6092/issn.1973-9494/2695
- ^{xxix} [doi:10.1002/9780470670606.wbecc1257](https://doi.org/10.1002/9780470670606.wbecc1257)
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