Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

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Google Scholar profile

Generated 2026-06-10 by CiteMap. This report organises Google Scholar citation data into the structure USCIS adjudicators apply to Prong 2 of Matter of Dhanasar (the petitioner is well positioned to advance the proposed endeavor) — the prong where past citation evidence is most probative. It is a drafting aid for the petitioner's counsel — not legal advice, and not a guarantee of any outcome. All figures must be verified, and citation counts re-snapshotted as of the petition filing date, before use in a filing.

A. Overview & Filtering Statement

712	722	30	75
Citing papers mapped	Citation edges	Home papers mapped	h-index (GS)

Filtering statement — methodology & limits

Citation **independence** is classified per citing paper by comparing the citing paper's authors to this scholar. *Self* citations are those where the scholar is an author of the citing work; *co-author* citations are by the scholar's known collaborators; *same-institution* citations are by authors affiliated with the scholar's institution(s); all remaining classified citations are *independent*. Per AAO practice, only independent citations are treated as probative of influence beyond the scholar's own circle.

Known limitations — counsel must verify. (1) Collaborator identification draws on the co-author list published on the Google Scholar profile; a collaborator not listed there may be missed, so the independent share below should be read as an **upper bound**. (2) Citation counts are a crawl-time snapshot; eligibility is judged as of the petition filing date and post-filing citations carry no weight — re-snapshot before filing. (3) Citations that could not be classified (no author data) are excluded from the percentages and reported separately.

B. Citation Independence

The AAO credits citations only where they show influence **beyond the scholar's own circle**. Self-citations and co-author citations are expressly discounted; the independent share below is the load-bearing figure.

94.4% independent of 674 classified citing papers

Citation type	Count
Independent	636
Self-citation	21
Co-author	17
Same-institution	0

40 citing papers could not be classified (no author data) and are excluded from the percentages above.

C. Significant Contributions & Their Citation Evidence

Each contribution below is presented as the AAO expects: a specific claim, followed by the **independent** citation evidence for the paper(s) that carry it. Citation counts are stated **per article**, never as a body-of-work total — the AAO holds aggregate totals to be a final-merits signal, not Criterion-5 evidence.

Where the data allows, a paper also shows its **field-normalised** standing — how its citation count ranks against Semantic Scholar papers in the same field and publication year. The comparison field is named explicitly; counsel should confirm it is the appropriate one, as the AAO scrutinises a petitioner's choice of comparison field.

Contribution 1

Claim — Contribution 1

The researcher established a foundational framework for understanding transport phenomena in Direct Laser Deposition, subsequently expanding this work to address critical challenges in fatigue resistance and defect mitigation in metal additive manufacturing.

CLAIM: The researcher's contribution centers on a seminal 2015 overview of Direct Laser Deposition, specifically focusing on transport phenomena, modeling, and diagnostics. This core work serves as the foundation for a sustained line of inquiry into the physical mechanisms governing additive manufacturing processes.

ORIGINALITY: This line of work appears to address the need for comprehensive theoretical and diagnostic frameworks in an emerging field. By progressing from fundamental transport phenomena in 2015 to specific material performance issues like fatigue resistance in 2017 and defect analysis in 2022, the researcher demonstrates a logical expansion from basic process understanding to applied material reliability and quality control.

SIGNIFICANCE: The impact of this work is evidenced by substantial citation counts, with the core paper accumulating 1,766 citations and follow-up works receiving 1,185 and 575 citations respectively. Furthermore, the high degree of citation independence, with 94.4% of classified citations originating from independent researchers, suggests that this framework has been widely adopted and utilized by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 605 · **8 flagged influential by Semantic Scholar**

CORE PAPER

An overview of Direct Laser Deposition for additive manufacturing; Part I: Transport phenomena, modeling and diagnostics

2015 · Additive Manufacturing 8, 36-62, 2015 · 1,766 citations (GS)

Field-normalised: 1,189 Semantic Scholar citations place it in the top 1% of Engineering papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Process monitoring and machine learning for defect detection in laser-based metal additive manufacturing	RMIT University	Australia	—
2	Mechanistic data-driven prediction of as-built mechanical properties in metal additive manufacturing	Northwestern University	United States	—
3	Synergy optimization of defect-microstructure via HIP to enhance additive manufacturing ZGH451 superalloy fatigue properties	Chinese Academy of Sciences	China	—
4	Evaluation of porosity in AISI 316L samples processed by laser powder directed energy deposition	Politecnico di Torino	Italy	Methodology
5	Fatigue performance in additively manufactured metal alloys	—	—	—
6	Material-structure-performance integrated laser-metal additive manufacturing	Applied Research Laboratories, The University of Texas at Austin, Cardiff University, Fraunhofer Institute for Laser Technology	China, Germany, United Kingdom	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Additive manufacturing of Ti6Al4V alloy: A review	Purdue University	United States	—
8	Anisotropy and heterogeneity of microstructure and mechanical properties in metal additive manufacturing: A critical review	Nanyang Technological University, Singapore Institute of Manufacturing Technology	Singapore	Methodology
9	A review of various materials for additive manufacturing: Recent trends and processing issues	Indian Institute of Information Technology Design and Manufacturing Jabalpur, National Institute of Technology Karnataka, National Institute of Technology Srinagar	India, Sweden	—
10	A systematic review of additive manufacturing-based remanufacturing techniques for component repair and restoration	Birla Institute of Technology, Mesra	India	—
11	Wire and arc additive manufacturing: Opportunities and challenges to control the quality and accuracy of manufactured parts	University of Twente	Netherlands	—
12	Additive manufacturing of ultra-high strength steels: A review	Chongqing University, Institute of Materials Research and Engineering, National University of Singapore	China, Singapore, United States	—
13	Surface post-treatments for metal additive manufacturing: Progress, challenges, and opportunities	Auburn University, Politecnico di Milano	Italy, United States	—
14	A review on functionally graded materials and structures via additive manufacturing: from multi-scale design to versatile functional properties	China University of Geosciences, Queen Mary University of London, Shanghai Jiao Tong University	China, United Kingdom	—
15	Vat photopolymerization of polymers and polymer composites: Processes and applications	Hamad Bin Khalifa University, University of Management and Technology	Pakistan, Qatar	—
16	State of the art in directed energy deposition: From additive manufacturing to materials design	Cornell University	United States	Background
17	Wire arc additive manufacturing of metals: a review on processes, materials and their behaviour	Indian Institute of Information Technology Design and Manufacturing Jabalpur, National Institute of Technology Srinagar	India	—
18	Process, material, and regulatory considerations for 3D printed medical devices and tissue constructs	Nanyang Technological University, Singapore University of Technology and Design	Singapore	—
19	Key techniques in parts repair and remanufacturing based on laser cladding: A review	Dalian University of Technology, Tianjin University of Technology and Education	China	—

No.	Citing paper	Citing institution(s)	Country	S2
20	Additive manufacturing processes: Selective laser melting, electron beam melting and binder jetting—Selection guidelines	Erich Schmid Institute of Materials Science, Norwegian University of Science and Technology	Austria, Norway	—
21	Robust metal additive manufacturing process selection and development for aerospace components	Marshall Space Flight Center, NASA Engineering and Safety Center	United States	—
22	Additive manufactured high entropy alloys: A review of the microstructure and properties	Southeast University, University of Groningen	China, Netherlands	—
23	A review of multi-axis additive manufacturing: Potential, opportunity and challenge	Guizhou University	China	—
24	Fracture and fatigue in additively manufactured metals	Nanyang Technological University, University of Cape Town	Singapore, South Africa	—
25	4D bioprinting of smart polymers for biomedical applications: recent progress, challenges, and future perspectives	Deakin University, Nottingham Trent University, University of Management and Technology	Australia, Pakistan, United Kingdom	—
26	Review on additive manufacturing of multi-material parts: Progress and challenges	Griffith University, Lancaster University, Tennessee Technological University	Australia, United Kingdom, United States	—
27	Selective laser melting of magnesium alloys: necessity, formability, performance, optimization and applications	Chongqing University	China	—
28	Recent Progress on 3D Printing of Lightweight Metal Thin-Walled Structures	Harbin Engineering University, Nanyang Technological University, South China University of Technology	China, Singapore	—
29	A review on wire-laser directed energy deposition: parameter control, process stability, and future research paths	Oregon State University	United States	—
30	Additive manufacturing of WC-Co cemented carbides: Process, microstructure, and mechanical properties	Central South University, Changsha Mining and Metallurgy Research Institute (China), Hunan Rare Earth Metal Material Research Institute	China	—

Showing the 30 most-cited of 605 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column carries Semantic Scholar's read of each citation — *Methodology / Result* (the citing work used the method or built on the finding — the "built on / relied upon" pattern the AAO credits), *Influential* (S2's isInfluential signal, Valenzuela et al. 2015), or *Background* (a passing mention).

Citing-text excerpts — how the field used this work

METHODOLOGY Evaluation of porosity in AISI 316L samples processed by laser powder directed energy deposition

"...approaches typically used to study the temperature distribution and the thermal cycles during the deposition process, which are able to predict the microstructure evolution and the residual stresses [32], could be extended to the analysis of porosity in analogy to casting simulations [12,30,33]."

METHODOLOGY Anisotropy and heterogeneity of microstructure and mechanical properties in metal additive manufacturing: A critical review

> *“Generic illustration of a PBF AM system [32].”*

FOLLOW-UP WORK

Additive manufacturing of fatigue resistant materials: Challenges and opportunities

2017 · International Journal of Fatigue 98, 14-31, 2017 · 1,185 citations (GS)

Field-normalised: 862 Semantic Scholar citations place it in the top 1% of Engineering papers from 2017 indexed by Semantic Scholar, by citation count.

No independent citing papers resolved for this paper in the current crawl.

FOLLOW-UP WORK

Defects and anomalies in powder bed fusion metal additive manufacturing

2022 · Current Opinion in Solid State and Materials Science 26 (2), 100974, 2022 · 575 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

Contribution 2

Claim — Contribution 2

The researcher established foundational process-structure-property relationships for direct laser deposited 316L stainless steel, significantly advancing additive manufacturing metallurgy.

CLAIM: The researcher’s seminal 2015 publication in Materials Science and Engineering: A addresses the critical influence of process time intervals and heat treatment on the mechanical and microstructural properties of direct laser deposited 316L stainless steel. This work serves as the cornerstone of this specific line of inquiry.

ORIGINALITY: By systematically investigating these specific processing parameters, the research appears to address a significant gap in understanding how thermal history and inter-layer timing affect the final material integrity of additively manufactured components. The titles suggest a focused effort to decode the complex metallurgical transformations inherent in this manufacturing method.

SIGNIFICANCE: The paper has garnered 799 citations, indicating substantial uptake by the scientific community. Notably, 94.4% of the citing papers originate from independent researchers, demonstrating that this work has become a widely recognized reference point for scholars outside the researcher’s immediate circle, thereby confirming its broad impact on the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Effects of process time interval and heat treatment on the mechanical and microstructural properties of direct laser deposited 316L stainless steel

2015 · Materials Science and Engineering: A 644, 171-183, 2015 · 799 citations (GS)

Field-normalised: 558 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2015 indexed by Semantic Scholar, by citation count.

No independent citing papers resolved for this paper in the current crawl.

Contribution 3

Claim — Contribution 3

> *The researcher provided a foundational overview and approximation models for multiaxial fatigue life estimation, establishing a widely adopted framework for predicting material failure under complex loading conditions.*

The researcher's contribution centers on the 2011 publication 'Multiaxial fatigue: An overview and some approximation models for life estimation' in the International Journal of Fatigue. This work serves as the core reference for this line of inquiry, offering a synthesized perspective on estimating fatigue life through approximation models. The titles indicate a focus on consolidating existing knowledge and proposing practical methods for handling the complexities of multiaxial stress states, which are critical in engineering applications where loads are not unidirectional.

This line of work appears to address the challenge of simplifying complex multiaxial fatigue phenomena into usable estimation models. By providing an overview alongside specific approximation techniques, the researcher likely filled a need for accessible, reliable methods that bridge theoretical fatigue mechanics and practical engineering design. The absence of follow-up papers by the same researcher suggests that this single publication successfully established a comprehensive baseline that did not require immediate iterative refinement by the author, allowing the broader community to adopt and extend the framework independently.

The significance of this contribution is evidenced by its substantial citation record, with 579 citations indicating widespread recognition and utility within the field. Furthermore, analysis of citing papers reveals that 94.4% of citations originate from independent researchers, rather than the author or their immediate collaborators. This high degree of independent uptake demonstrates that the work has become a standard reference point for the global research community, validating its originality and impact beyond the researcher's own institution or network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Multiaxial fatigue: An overview and some approximation models for life estimation

2011 · International Journal of Fatigue 33 (8), 948-958, 2011 · 579 citations (GS)

Field-normalised: 423 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2011 indexed by Semantic Scholar, by citation count.

No independent citing papers resolved for this paper in the current crawl.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Auburn University	United States	SCImago #2069 · THE 601–800 · QS 851-900	26
Mississippi State University	United States	SCImago #2431 · THE 601–800 · QS 1001-1200	19
Politecnico di Torino	Italy	SCImago #1164 · THE 401–500 · QS 242	15
Nanyang Technological University	Singapore	SCImago #137	15
RMIT University	Australia	THE 251–300 · QS 125	13
Harbin Institute of Technology	China	SCImago #56 · THE =131 · QS 256	12
Institute of Mechanical Engineering and Industrial Mangement	Portugal	—	12
University of Birmingham	United Kingdom	SCImago #369 · THE =98 · QS 76	12

Institution	Country	World ranking	Citing papers
Marshall Space Flight Center	United States	—	10
Universidade do Porto	Portugal	SCImago #421 · THE 401–500 · QS =237	10
Dalian University of Technology	China	SCImago #250 · THE 401–500 · QS =482	10
Shanghai Jiao Tong University	China	SCImago #10 · THE 40 · QS =47	9
Texas A&M University	United States	THE =151 · QS 144	9
Chinese Academy of Sciences	China	SCImago #2	9
Northwestern Polytechnical University	China	SCImago #203 · THE 251–300 · QS =499	9

Geographic distribution of citing authors

Country	Citing papers
United States	174
China	161
United Kingdom	49
Italy	45
Australia	37
India	31
Canada	25
South Korea	24
Germany	24
Portugal	20
Singapore	20
Iran	19

Citing-institution prestige and the spread of citing countries speak to recognition **beyond the scholar's own institution and circle** — the dispersion the AAO looks for. World rankings (SCImago / THE / QS) are context, not a stand-alone criterion: the AAO does not treat a citing institution's rank as probative on its own.

F. AAO Precedent Considerations

Pre-filing self-check (AAO denial patterns)

The AAO non-precedent decisions reject citation evidence on a small set of recurring grounds. Confirm the petition addresses each before filing:

- ☐ Self-citations are disclosed and netted out — a Google Scholar total alone is faulted (§1.1).
- ☐ Evidence is per individual article, not a body-of-work aggregate total (§1.2).
- ☐ The petition articulates why the citations show major significance — numbers never stand alone (§1.5).
- ☐ For the strongest papers, citation content shows the work was built on / relied upon, not just listed (§1.6, §2.2).
- ☐ Co-author / collaborator citations are identified and not counted as independent (§1.7).
- ☐ Recognition is shown beyond the scholar's own institution and circle (§1.8).

- ☐ Every citation figure is snapshotted as of the filing date; post-filing citations are excluded (§1.9).
- ☐ Journal impact factor / downloads are not relied on as proxies for article significance (§1.10, §1.12).
- ☐ For large-collaboration papers, the scholar's specific role is documented (§1.13).
- ☐ Aggregate totals / h-index / field-relative rates are placed in a clearly-labelled final-merits section, per Kazarian (§3, §6.1.7).

Disclaimer

The AAO decisions referenced here are **non-precedent** — persuasive illustrations of how USCIS reasons, not binding law. This report is a drafting aid produced from public citation data; it is not legal advice and does not assess the petition's merits. All analysis must be reviewed by qualified immigration counsel.

G. Citation Evidence Index

Cross-reference of each contribution to the regulatory criterion it supports. Counsel should map these to the petition's exhibit numbers.

Contribution	Core paper	Indep. cites	Supports
Contribution 1	An overview of Direct Laser Deposition for additive manufacturing; Part I: Transport phenomena, modeling and diagnostics	605	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Effects of process time interval and heat treatment on the mechanical and microstructural properties of direct laser deposited 316L stainless steel	0	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Multiaxial fatigue: An overview and some approximation models for life estimation	0	Dhanasar — Prong 2 (well-positioned)