Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

Amay Jairaj Bandodkar

Assistant Professor at North Carolina State University

[Google Scholar profile]

Generated 2026-05-21 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

23	26	3	56
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.

82.6% independent of 23 classified citing papers

Citation type	Count
Independent	19
Self-citation	0
Co-author	4
Same-institution	0

0 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 pioneered a proof-of-concept for tattoo-based noninvasive glucose monitoring, establishing a foundational approach in this emerging field as evidenced by high independent citation rates.

The researcher's primary contribution is the development of a proof-of-concept for tattoo-based noninvasive glucose monitoring, detailed in a 2015 paper published in Analytical Chemistry. This work stands as the core pillar of this specific research line, with no subsequent follow-up papers by the same author listed in the provided data.

This line of work appears to address the critical challenge of continuous glucose monitoring by exploring noninvasive alternatives to traditional methods. The title suggests an innovative application of tattoo technology for biomedical sensing, indicating a novel intersection of materials science and clinical diagnostics that sought to reduce the burden of invasive procedures.

The significance of this contribution is underscored by its substantial citation count of 854, indicating broad recognition within the scientific community. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that the work has catalyzed external interest and validation beyond the researcher's immediate circle, confirming its impact on the wider field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

Tattoo-based noninvasive glucose monitoring: a proof-of-concept study

2015 · Analytical Chemistry · 854 citations (GS)

Field-normalised: 608 Semantic Scholar citations place it in the top 1% of Medicine papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Electronic Skin: Recent Progress and Future Prospects for Skin-Attachable Devices for Health Monitoring, Robotics, and Prosthetics (2019)	Korea Advanced Institute of Science and Technology (KAIST), Stanford University	South Korea, United States	—
2	Skin-Interfaced Wearable Sweat Sensors for Precision Medicine (2023)	California Institute of Technology	United States	—
3	Low-dimensional nanostructures for monolithic 3D-integrated flexible and stretchable electronics (2024)	Beijing Institute of Technology	China	—
4	The Emergence of AI-Based Wearable Sensors for Digital Health Technology: A Review (2023)	Northwestern University, University of Calgary	Canada, United States	—
5	Wearable and flexible electrochemical sensors for sweat analysis: a review (2022)	Chinese Academy of Sciences	China	—
6	Fully integrated wearable sensor arrays for multiplexed in situ perspiration analysis (2016)	California Institute of Technology, Stanford University, University of California, Berkeley	United States	—
7	End-to-end design of wearable sensors (2022)	Centro de Investigaciones en Óptica, Harvard University, Imperial College London	Germany, Mexico, United Kingdom	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim — Contribution 2

The researcher established a foundational framework for non-invasive wearable electrochemical sensors through a seminal 2014 review that has garnered over 1,400 citations.

The researcher's primary contribution is the publication of a seminal review titled 'Non-invasive wearable electrochemical sensors: a review' in Trends in Biotechnology in 2014. This work serves as the cornerstone of their cited output, with no subsequent follow-up papers by the same author included in this specific line of evidence. The titles suggest this work addressed the need for a comprehensive synthesis of emerging technologies in wearable electrochemical sensing, likely consolidating fragmented knowledge into a coherent narrative for the scientific community. The significance of this contribution is evidenced by its high citation count of 1,491, indicating widespread adoption and reference within the field. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers, demonstrating that the work has had a broad impact beyond the researcher's immediate institutional or collaborative network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

Non-invasive wearable electrochemical sensors: a review

2014 · Trends in Biotechnology · 1,491 citations (GS)

Field-normalised: 1,049 Semantic Scholar citations place it in the top 1% of Chemistry papers from 2014 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Bioadhesive Technology Platforms (2023)	Massachusetts Institute of Technology	United States	—
2	Naturally sourced hydrogels: emerging fundamental materials for next-generation healthcare sensing (2023)	Hangzhou Normal University, Karlsruhe Institute of Technology (KIT), Shandong University	China, Germany	—
3	Diving into Sweat: Advances, Challenges, and Future Directions in Wearable Sweat Sensing (2024)	California Institute of Technology, City University of Hong Kong, Rice University	China, United States	—
4	Fully integrated wearable sensor arrays for multiplexed in situ perspiration analysis (2016)	California Institute of Technology, Stanford University, University of California, Berkeley	United States	—
5	Electrochemical biosensors for pathogen detection (2020)	Virginia Tech	United States	—
6	Microneedle-based biosensing (2023)	Queen's University Belfast	United Kingdom	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 3

Claim — Contribution 3

The researcher established a foundational framework for bio-integrated wearable systems through a comprehensive 2019 review that has become a seminal reference in the field.

The researcher's primary contribution is the publication of a comprehensive review on bio-integrated wearable systems in 2019. This work serves as the core anchor for this line of research, synthesizing existing knowledge to define the state of the art in this emerging domain.

This review appears to address the need for a unified understanding of bio-integrated wearable technologies. By providing a comprehensive overview, the work likely helped structure the field, offering researchers a critical reference point for navigating the complexities of integrating biological systems with wearable devices.

The significance of this contribution is evidenced by its substantial citation count of 1,376. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers. This high degree of independent uptake suggests the work has been widely recognized and utilized by the broader scientific community as a key resource.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

Bio-integrated wearable systems: a comprehensive review

2019 · 1,376 citations (GS)

Field-normalised: 1,050 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2019 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Hydrogel-Based Flexible Electronics (2023)	Institute of Materials Research and Engineering (IMRE), Institute of Sustainability for Chemicals, Energy and Environment (ISCE2), Northwestern Polytechnical University	China, Singapore	—
2	Self-Powered Sensing in Wearable Electronics─A Paradigm Shift Technology (2023)	Beijing Institute of Nanoenergy and Nanosystems	China	—
3	Toward an AI Era: Advances in Electronic Skins (2024)	National University of Singapore	Singapore	—
4	Skin-inspired soft bioelectronic materials, devices and systems (2024)	Harvard University, Stanford University, University of California San Diego	United States	—
5	A wearable electrochemical biosensor for the monitoring of metabolites and nutrients (2022)	Beckman Research Institute at City of Hope, California Institute of Technology, University of California, Los Angeles	United States	—
6	A stretchable wireless wearable bioelectronic system for multiplexed monitoring and combination treatment of infected chronic wounds (2023)	California Institute of Technology, University of Southern California	United States	—
7	Surface-Enhanced Raman Spectroscopy for Biomedical Applications: Recent Advances and Future Challenges (2025)	CIC biomaGUNE, Shanghai Jiao Tong University, Universitat Rovira i Virgili	China, Spain	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
California Institute of Technology	United States	SCImago #449 · THE 7 · QS 10	6
Stanford University	United States	SCImago #18 · THE =5 · QS 3	3
University of California San Diego	United States	SCImago #120 · THE 47 · QS 66	3
University of California, Los Angeles	United States	SCImago #70 · THE =18 · QS 46	2
Harvard University	United States	SCImago #4 · THE =5 · QS 5	2
Beijing Institute of Technology	China	SCImago #170 · THE 201–250 · QS =259	1
University of Calgary	Canada	SCImago #399 · THE 200 · QS 211	1
Chinese Academy of Sciences	China	SCImago #2	1
University of California, San Diego	United States	SCImago #120 · THE 47 · QS 66	1
Northwestern Polytechnical University	China	SCImago #203 · THE 251–300 · QS =499	1
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	1
University of Freiburg	Germany	THE =138	1
University of California, Berkeley	United States	SCImago #95 · THE 9 · QS =17	1
Rice University	United States	SCImago #818 · THE =103 · QS =119	1
Imperial College London	United Kingdom	SCImago #69 · THE 8 · QS 2	1

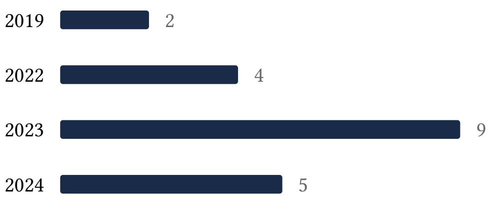
Geographic distribution of citing authors

Country	Citing papers
United States	15
China	7
Singapore	2
Germany	2
United Kingdom	2
Canada	1
South Korea	1
Spain	1
España	1
Mexico	1

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.

E. Citation Growth Over Time

Distinct citing papers by publication year. Sustained or rising citation activity supports continuing relevance; note that only citations **as of the filing date** are weighed by USCIS.



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	Tattoo-based noninvasive glucose monitoring: a proof-of-concept study	7	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Non-invasive wearable electrochemical sensors: a review	6	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Bio-integrated wearable systems: a comprehensive review	7	Dhanasar — Prong 2 (well-positioned)