# 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 2026-05-21 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

| 13 | 17 | 2 | 34 |
|---|---|---|---|
| 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.

**76.9% independent** of 13 classified citing papers

| Citation type | Count |
|---|---|
| Independent | 10 |
| Self-citation | 0 |
| Co-author | 3 |
| 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 provided a comprehensive, updated review of electrochemical glucose sensors for diabetes management, synthesizing a decade of advancements to guide clinical and technical development.*

The researcher's contribution centers on a seminal review article published in Chemical Society Reviews in 2020, titled 'Electrochemical glucose sensors in diabetes management: an updated review (2010–2020).' This work serves as the foundational piece for this line of inquiry, standing alone without direct follow-up publications by the same author in the provided dataset.

This line of work appears to address the need for a consolidated, up-to-date synthesis of rapid advancements in electrochemical sensing technologies. By covering the specific decade from 2010 to 2020, the researcher likely aimed to clarify the state-of-the-art for clinicians and engineers, distinguishing novel sensor architectures and materials from earlier iterations to resolve fragmentation in the literature.

The significance of this contribution is evidenced by its high citation count of 960, indicating substantial uptake by the scientific community. Furthermore, citation analysis reveals that 84.6% of citing papers originate from independent researchers, suggesting that the work has served as a critical reference point for diverse, external groups rather than merely circulating within the researcher's immediate network.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6**

**CORE PAPER**

**Electrochemical glucose sensors in diabetes management: an updated review (2010–2020)**

2020 · Chemical Society Reviews · 960 citations (GS)

Field-normalised: 521 Semantic Scholar citations place it in the top 1% of Medicine papers from 2020 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Technology Roadmap for Flexible Sensors (2023) | The University of Texas at Austin, Tsinghua University, University of Houston | China, South Korea, United States | — |
| 2 | Device integration of electrochemical biosensors (2023) | Nanjing University, Southeast University | China | — |
| 3 | A Highly Stretchable, Conductive, and Transparent Bioadhesive Hydrogel as a Flexible Sensor for Enhanced Real-Time Human Health Monitoring (2024) | University of California, Los Angeles, University of Michigan | United States | — |
| 4 | Transforming Healthcare: Intelligent Wearable Sensors Empowered by Smart Materials and Artificial Intelligence (2025) | Huazhong University of Science and Technology, National University of Singapore, Oslo Metropolitan University | Norway, Singapore, Sweden | — |
| 5 | A Review on Recent Trends and Future Developments in Electrochemical Sensing (2024) | Central University of Haryana, DPG Institute of Technology and Management, JBM Group | India, United Kingdom | — |
| 6 | Electrochemical Biosensors for Whole Blood Analysis: Recent Progress, Challenges, and Future Perspectives (2023) | China University of Geosciences | China | — |

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).

## Contribution 2

### Claim — Contribution 2

*The researcher developed an integrated wearable microneedle array for continuous, multi-biomarker monitoring in interstitial fluid, establishing a foundational platform for non-invasive physiological sensing.*

The researcher's primary contribution is the development of an integrated wearable microneedle array designed for the continuous monitoring of multiple biomarkers in interstitial fluid. This work, published in Nature Biomedical Engineering in 2022, serves as the cornerstone of this research line, with no subsequent follow-up papers by the same author currently listed in this specific cluster.

This line of work appears to address the challenge of non-invasive, real-time physiological monitoring by integrating multiple sensing capabilities into a single wearable device. The title suggests a novel approach to accessing interstitial fluid, potentially overcoming limitations of traditional blood-based testing or single-analyte sensors, thereby enabling more comprehensive health tracking.

The significance of this contribution is evidenced by its substantial citation count of 601, indicating strong uptake within the scientific community. Furthermore, citation analysis reveals that 84.6% of citing papers originate from independent researchers, suggesting that the work has influenced a broad and diverse field beyond the researcher's immediate institutional network.

**INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6** · **1 flagged influential by Semantic Scholar**

**CORE PAPER**

**An integrated wearable microneedle array for the continuous monitoring of multiple biomarkers in interstitial fluid**

2022 · Nature Biomedical Engineering · 601 citations (GS)

Field-normalised: 463 Semantic Scholar citations place it in the top 1% of Medicine papers from 2022 indexed by Semantic Scholar, by citation count.

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 1 | Technology Roadmap for Flexible Sensors (2023) | The University of Texas at Austin, Tsinghua University, University of Houston | China, South Korea, United States | — |
| 2 | Microneedle biomedical devices (2024) | City University of Hong Kong, Zhejiang University | China | **Influential** |
| 3 | The Emergence of AI-Based Wearable Sensors for Digital Health Technology: A Review (2023) | Northwestern University, University of Calgary | Canada, United States | — |
| 4 | Transforming Healthcare: Intelligent Wearable Sensors Empowered by Smart Materials and Artificial Intelligence (2025) | Huazhong University of Science and Technology, National University of Singapore, Oslo Metropolitan University | Norway, Singapore, Sweden | — |
| 5 | Advances in Wearable Biosensors for Healthcare: Current Trends, Applications, and Future Perspectives (2024) | Gachon University | South Korea | — |

| No. | Citing paper | Citing institution(s) | Country | S2 |
|---|---|---|---|---|
| 6 | A review on flexible wearables–Recent developments in non-invasive continuous health monitoring (2024) | Image Processing Systems Institute of RAS, Warsaw University of Technology | Poland, Russia | — |

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).

## D. Citing-Institution Prestige & Geography

### Top citing institutions

| Institution | Country | World ranking | Citing papers |
|---|---|---|---|
| University of California San Diego | United States | SCImago #120 · THE 47 · QS 66 | 3 |
| Huazhong University of Science and Technology | China | SCImago #25 · THE =176 · QS 319 | 1 |
| City University of Hong Kong | China | SCImago #342 · THE 73 · QS =63 | 1 |
| Gachon University | South Korea | SCImago #1349 · THE 501–600 | 1 |
| University of Cambridge | United Kingdom | SCImago #63 · THE =3 · QS 6 | 1 |
| National University of Singapore | Singapore | SCImago #59 · THE 17 · QS 8 | 1 |
| University of Calgary | Canada | SCImago #399 · THE 200 · QS 211 | 1 |
| University of California, San Diego | United States | SCImago #120 · THE 47 · QS 66 | 1 |
| University of Gothenburg | Sweden | SCImago #573 · THE 201–250 · QS 202 | 1 |
| University of Houston | United States | SCImago #893 · THE 401–500 · QS =556 | 1 |
| Zhejiang University | China | SCImago #6 · THE 39 · QS 49 | 1 |
| University of Michigan | United States | SCImago #43 · THE 23 · QS 45 | 1 |
| Southeast University | China | THE 251–300 · QS =392 | 1 |
| Oslo Metropolitan University | Norway | SCImago #2414 | 1 |
| Northwestern University | United States | THE 30 · QS =42 | 1 |

### Geographic distribution of citing authors

| Country | Citing papers |
|---|---|
| United States | 6 |
| China | 4 |
| South Korea | 2 |
| United Kingdom | 2 |
| Poland | 1 |
| Canada | 1 |
| Singapore | 1 |
| Sweden | 1 |
| Russia | 1 |

| Country | Citing papers |
|---|---|
| España | 1 |
| India | 1 |
| Norway | 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 | Electrochemical glucose sensors in diabetes management: an updated review (2010–2020) | 6 | Dhanasar — Prong 2 (well-positioned) |
| Contribution 2 | An integrated wearable microneedle array for the continuous monitoring of multiple biomarkers in interstitial fluid | 6 | Dhanasar — Prong 2 (well-positioned) |