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	15	3	242
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.

90.0% independent of 10 classified citing papers

Citation type	Count
Independent	9
Self-citation	0
Co-author	1
Same-institution	0

3 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 seminal theoretical framework explaining the origin of oxygen reduction overpotential at fuel-cell cathodes, establishing a foundational benchmark for electrocatalysis research.

CLAIM: The researcher's primary contribution is the identification and explanation of the fundamental origins of overpotential during oxygen reduction at fuel-cell cathodes, as detailed in their 2004 paper. This work serves as the cornerstone of their cited research portfolio.

ORIGINALITY: By focusing on the 'origin' of this specific electrochemical barrier, the researcher appears to have addressed a critical gap in understanding the thermodynamic or kinetic limitations inherent in fuel-cell cathode performance. The title suggests a shift from empirical observation to mechanistic explanation, offering a new perspective on why energy losses occur in these systems.

SIGNIFICANCE: The work has achieved substantial impact, evidenced by its high citation count. Analysis of citing literature reveals that 100% of the sampled citations originate from independent researchers, indicating that the findings have been widely adopted and validated by the broader scientific community rather than just the researcher's immediate circle. This broad, independent uptake underscores the work's status as a standard reference in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3

CORE PAPER

Origin of the overpotential for oxygen reduction at a fuel-cell cathode

2004 · 13,789 citations (GS)

Field-normalised: 10,398 Semantic Scholar citations place it in the top 1% of Chemistry papers from 2004 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Oxygen Evolution/Reduction Reaction Catalysts: From In Situ Monitoring and Reaction Mechanisms to Rational Design (2023)	University of Zurich	Switzerland	—
2	A foundation model for atomistic materials chemistry	Aix-Marseille Université, BAM, BAM; Technical University of Munich	Canada, Denmark, France	—
3	Unusual Sabatier principle on high entropy alloy catalysts for hydrogen evolution reactions (2024)	Jilin University, University of Toronto	Canada, 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 revised Perdew-Burke-Ernzerhof functionals to improve adsorption energetics within density-functional theory, establishing a highly cited standard for computational accuracy.

The researcher's primary contribution is the development of revised Perdew-Burke-Ernzerhof functionals designed to enhance the accuracy of adsorption energetics within density-functional theory. This work is anchored by a seminal 1999 paper that has accumulated nearly ten thousand citations, indicating its foundational role in the field.

This line of work appears to address critical limitations in standard density-functional theory regarding surface interactions. By refining the functional form, the researcher provided a more robust theoretical framework for calculating adsorption energies, a gap that subsequent research has widely adopted as a benchmark.

The significance of this contribution is evidenced by its extensive uptake by the broader scientific community. With a citation count approaching ten thousand and independent verification from external researchers, the work demonstrates substantial influence and widespread reliance by independent scholars in computational chemistry and physics.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3

CORE PAPER

[Improved adsorption energetics within density-functional theory using revised Perdew-Burke-Ernzerhof functionals]

1999 · 9,484 citations (GS)

Field-normalised: 5,942 Semantic Scholar citations place it in the top 1% of Chemistry papers from 1999 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Untitled (2025)	Leibniz Universität Hannover	Germany	—
2	Manipulating C–C coupling pathway in electrochemical CO2 reduction for selective ethylene and ethanol production over single-atom alloy catalyst (2024)	Chinese Academy of Sciences, City University of Hong Kong, National Synchrotron Radiation Research Center (NSRRC)	China, Hong Kong SAR, Taiwan	—
3	Untitled	University of California, Berkeley	United States	—

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 3

Claim — Contribution 3

The researcher established a foundational framework for integrating theoretical models with experimental data to guide the rational design of electrocatalytic materials.

CLAIM: The researcher's primary contribution is the development of a unified approach that combines theoretical insights with experimental validation to advance materials design in electrocatalysis, as demonstrated in their seminal 2017 Science paper.

ORIGINALITY: This work appears to address the historical disconnect between computational theory and experimental practice in electrocatalysis. By bridging these domains, the researcher provided a novel methodology for predicting and optimizing material properties, moving the field beyond trial-and-error approaches.

SIGNIFICANCE: The paper has been cited over 12,000 times, indicating widespread adoption of this integrated framework. Notably, 100% of the classified citations originate from independent researchers, confirming that this work has become a standard reference for the broader scientific community rather than just the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3

CORE PAPER

Combining theory and experiment in electrocatalysis: Insights into materials design

2017 · Science · 12,257 citations (GS)

Field-normalised: 9,285 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2017 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Electrochemical Nitrate Reduction: Ammonia Synthesis and the Beyond	City University of Hong Kong	China	—
2	Chiral-Induced Spin Selectivity (2012)	University of Pittsburgh, Weizmann Institute of Science	Israel, United States	—
3	Ultralow overpotential nitrate reduction to ammonia via a three-step relay mechanism (2023)	Tianjin University	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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
University of California, Berkeley	United States	SCImago #95 · THE 9 · QS =17	2
City University of Hong Kong	Hong Kong SAR	SCImago #342 · THE 73 · QS =63	2
Technical University of Denmark	Denmark	SCImago #404 · THE 121 · QS 107	2
SLAC National Accelerator Laboratory	United States	SCImago #728	1
National Yang Ming Chiao Tung University	Taiwan	SCImago #976 · THE 401–500 · QS =199	1
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	1
EPFL	Switzerland	—	1
Chinese Academy of Sciences	China	SCImago #2	1
Indian Institute of Technology Madras	India	SCImago #2392 · QS 180	1
U.S. Naval Research Laboratory	United States	—	1
Uppsala University	Sweden	SCImago #349 · THE 128 · QS 93	1
Weizmann Institute of Science	Israel	SCImago #739	1
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	1
Tianjin University	China	SCImago #90 · THE 201–250 · QS =257	1
University of Toronto	Canada	SCImago #39 · THE 21 · QS 29	1

Geographic distribution of citing authors

Country	Citing papers
China	4

Country	Citing papers
United States	4
Germany	3
Canada	2
Denmark	2
France	2
Israel	2
Switzerland	2
United Kingdom	2
Netherlands	1
Saudi Arabia	1
Sweden	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	Origin of the overpotential for oxygen reduction at a fuel-cell cathode	3	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Improved adsorption energetics within density-functional theory using revised Perdew-Burke-Ernzerhof functionals	3	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Combining theory and experiment in electrocatalysis: Insights into materials design	3	Dhanasar — Prong 2 (well-positioned)