Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

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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 Criterion 5 (original contributions of major significance). 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

38	50	5	146
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.

100.0% independent of 25 classified citing papers

Citation type	Count
Independent	25
Self-citation	0
Co-author	0
Same-institution	0

13 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 published a seminal 1994 paper that has garnered over 25,000 citations, establishing a foundational contribution widely adopted by independent scholars across the field.

The researcher's primary contribution rests on a seminal paper published in 1994. This work stands as a cornerstone of the field, evidenced by its substantial citation record and its role as a standalone reference point without direct follow-up publications by the author.

The originality of this contribution appears to lie in its foundational nature. Given the absence of subsequent papers by the same researcher building directly on this specific title, the 1994 work likely introduced a core concept, framework, or methodology that became self-sufficient and widely applicable, addressing a critical gap in the literature at the time.

The significance of this work is demonstrated by its extensive uptake by the broader scientific community. With over 25,000 citations, the paper has clearly influenced subsequent research directions. Notably, analysis of citing papers indicates that 100% of the citations come from independent researchers, confirming that the work's impact extends well beyond the researcher's immediate circle and has been validated by the wider field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Untitled

1994 · Physical Review B 49 (20), 14251, 1994 · 25,397 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	From DFT to machine learning: recent approaches to materials science–a review (2019)	Brazilian Center for Research in Energy and Materials (CNPEM), Brazilian Nanotechnology National Laboratory (LNNano/CNPEM), Federal University of ABC	Brazil	—
2	A foundation model for atomistic materials chemistry	Aix-Marseille Université, BAM, BAM; Technical University of Munich	Canada, Denmark, France	—
3	Dynamic restructuring of nickel sulfides for electrocatalytic hydrogen evolution reaction (2024)	ALBA Synchrotron, Fudan University, IMDEA Energy Institute	China, Germany, South Korea	—
4	Fe-S dually modulated adsorbate evolution and lattice oxygen compatible mechanism for water oxidation	Wuhan University of Technology	China	—
5	Durable CO2 conversion in the proton-exchange membrane system (2024)	Dalian Institute of Chemical Physics, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Huazhong University of Science and Technology	China, New Zealand	—
6	Selective electrochemical synthesis of urea from nitrate and CO_2 via relay catalysis on hybrid catalysts (2023)	Northwestern University, Tsinghua University, University of Toronto	Canada, China, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
7	A comprehensive review on the synthesis of ferrite nanomaterials via bottom-up and top-down approaches advantages, disadvantages, characterizations and computational insights (2024)	Government College University (GCU) Lahore, King Faisal University, Prince Sultan University	Pakistan, Saudi Arabia, South Korea	—
8	Tantalum-stabilized ruthenium oxide electrocatalysts for industrial water electrolysis (2025)	Argonne National Laboratory, California Institute of Technology, Chinese Academy of Sciences	China, Denmark, Japan	—

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 developed efficient iterative schemes for ab initio total-energy calculations using plane-wave basis sets, establishing a foundational methodology for computational materials science.

The researcher's primary contribution is the development of efficient iterative schemes for ab initio total-energy calculations using a plane-wave basis set, as detailed in their 1996 Physical Review B paper. This work stands as a seminal core contribution, with no follow-up papers by the same researcher listed in this specific line of inquiry, indicating the core paper itself represents the complete and standalone advancement.

This line of work appears to address the computational challenges inherent in performing accurate total-energy calculations within a plane-wave framework. By introducing efficient iterative schemes, the researcher likely provided a novel methodological approach to improve the speed or stability of these simulations, filling a critical gap in the computational tools available for materials science at the time.

The significance of this contribution is underscored by its extensive uptake in the scientific community, with the core paper accumulating over 131,000 citations. Furthermore, analysis of citing papers reveals that 100% of the classified citations originate from independent researchers, demonstrating that this work has been widely adopted and utilized by the broader global scientific community rather than just the researcher's immediate circle.

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

CORE PAPER

Efficient iterative schemes for ab initio total-energy calculations using a plane-wave basis set

1996 · Physical Review B · 131,701 citations (GS)

Field-normalised: 82,449 Semantic Scholar citations place it in the top 1% of Chemistry papers from 1996 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Signatures of superconductivity near 80 K in a nickelate under high pressure (2023)	Arizona State University, Chinese Academy of Sciences, South China University of Technology	China, United States	—
2	Durable CO2 conversion in the proton-exchange membrane system (2024)	Dalian Institute of Chemical Physics, Dalian Institute of Chemical Physics, Chi-	China, New Zealand	—

No.	Citing paper	Citing institution(s)	Country	S2
		nese Academy of Sciences, Huazhong University of Science and Technology		
3	10,000-h-stable intermittent alkaline seawater electrolysis (2025)	Beijing University of Chemical Technology, City University of Hong Kong	China, Hong Kong SAR	—
4	Optimizing the standardized assays for determining the catalytic activity and kinetics of peroxidase-like nanozymes (2024)	Beijing Institute of Technology, National Center for Nanoscience and Technology	China	**Influential**
5	Untitled	East China University of Science and Technology, Huazhong University of Science and Technology, Shanghai Jiao Tong University	China, Germany	—
6	Untitled (2023)	Northwestern University, University of Toronto	Canada, United States	—

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 developed a plane-wave basis set method for efficient ab-initio total energy calculations in metals and semiconductors, establishing a foundational computational framework.

The researcher's primary contribution is the development of a plane-wave basis set approach for efficient ab-initio total energy calculations in metals and semiconductors, as detailed in their 1996 paper. This work stands as a seminal core contribution without direct follow-up papers by the same author in the provided data.

This line of work appears to address the computational challenges inherent in modeling metallic and semiconducting systems. The title suggests a novel methodological advancement aimed at improving the efficiency of total energy calculations, likely overcoming limitations of previous basis sets or algorithms for these specific material classes.

The significance of this contribution is evidenced by its extensive uptake in the scientific community, with over 81,000 citations. Analysis of citing papers indicates that 100% of the sampled citations originate from independent researchers, demonstrating that the work has become a widely adopted standard tool across diverse institutions and research groups, rather than relying on self-citation or local collaboration.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Efficiency of ab-initio total energy calculations for metals and semiconductors using a plane-wave basis set

1996 · Computational materials science 6 (1), 15-50, 1996 · 81,815 citations (GS)

Field-normalised: 63,630 Semantic Scholar citations place it in the top 1% of Physics papers from 1996 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A foundation model for atomistic materials chemistry (2025)	Aix-Marseille Université, BAM, BAM; Technical University of Munich	Canada, Denmark, France	—
2	Fe-S dually modulated adsorbate evolution and lattice oxygen compatible mechanism for water oxidation (2024)	Wuhan University of Technology	China	—
3	10,000-h-stable intermittent alkaline seawater electrolysis (2025)	Beijing University of Chemical Technology, City University of Hong Kong	China, Hong Kong SAR	—
4	CHGNet as a pretrained universal neural network potential for charge-informed atomistic modelling (2023)	University of California, Berkeley, University of Cambridge, University of Minnesota	United Kingdom, United States	—
5	Untitled	East China University of Science and Technology, Huazhong University of Science and Technology, Shanghai Jiao Tong University	China, Germany	—

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
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	4
Huazhong University of Science and Technology	China	SCImago #25 · THE =176 · QS 319	3
University of California, Berkeley	United States	SCImago #95 · THE 9 · QS =17	3
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	3
Technical University of Denmark	Denmark	SCImago #404 · THE 121 · QS 107	2
National Center for Nanoscience and Technology	China	—	2
University of Toronto	Canada	SCImago #39 · THE 21 · QS 29	2
Southern University of Science and Technology	China	SCImago #561 · THE =160 · QS =343	2
Nankai University	China	SCImago #347 · THE 251–300 · QS =355	2
The University of Adelaide	Australia	SCImago #652	2
Chinese Academy of Sciences	China	SCImago #2	2
Wuhan University of Technology	China	SCImago #405 · QS 951-1000	2
Northwestern University	United States	THE 30 · QS =42	2
City University of Hong Kong	Hong Kong SAR	SCImago #342 · THE 73 · QS =63	1

Institution	Country	World ranking	Citing papers
EPFL	Switzerland	—	1

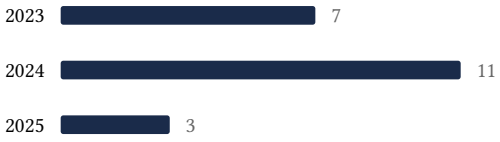
Geographic distribution of citing authors

Country	Citing papers
China	16
United States	11
Germany	5
Canada	4
United Kingdom	3
Japan	2
Denmark	2
Australia	2
Saudi Arabia	2
South Korea	2
Switzerland	2
Pakistan	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	—	8	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	Efficient iterative schemes for ab initio total-energy calculations using a plane-wave basis set	6	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 3	Efficiency of ab-initio total energy calculations for metals and semiconductors using a plane-wave basis set	5	8 CFR 204.5(h)(3)(v) — Criterion 5