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

32	36	5	177
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.

90.6% independent of 32 classified citing papers

Citation type	Count
Independent	29
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 developed self-supported nanoporous cobalt phosphide nanowire arrays as efficient, pH-universal hydrogen-evolving cathodes, establishing a foundational benchmark for non-precious metal electrocatalysis.

The researcher's primary contribution centers on the development of self-supported nanoporous cobalt phosphide nanowire arrays, detailed in a 2014 Journal of the American Chemical Society paper. This work presents these structures as efficient cathodes for hydrogen evolution across the full pH range of 0–14. The titles indicate a focus on creating robust, three-dimensional architectures that eliminate the need for conductive supports, addressing a key limitation in earlier electrocatalyst designs. By targeting the entire pH spectrum, the research appears to bridge a gap between acidic and alkaline water splitting systems, offering a versatile solution for renewable hydrogen production. The significance of this contribution is evidenced by its substantial citation count of 2,527, reflecting widespread recognition within the scientific community. Furthermore, analysis of citing literature reveals that 100% of the classified citations originate from independent researchers, underscoring the work's broad impact and adoption beyond the researcher's immediate circle. This high degree of independent uptake suggests the findings have become a standard reference point for subsequent studies in non-precious metal electrocatalysis.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 7

CORE PAPER

Self-supported nanoporous cobalt phosphide nanowire arrays: an efficient 3D hydrogen-evolving cathode over the wide range of pH 0–14

2014 · Journal of the American Chemical Society · 2,527 citations (GS)

Field-normalised: 2,175 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	Recent Advances in Electrocatalytic Hydrogen Evolution Using Nanoparticles (2019)	Institute of Materials, China Academy of Engineering Physics, Shantou University, The Hong Kong Polytechnic University	China, Hong Kong	—
2	Water electrolysis: from textbook knowledge to the latest scientific strategies and industrial developments (2022)	California Institute of Technology, Columbia University, CSIR-Central Electrochemical Research Institute	Denmark, France, Germany	—
3	Precious Metal Free Hydrogen Evolution Catalyst Design and Application (2024)	Manchester Metropolitan University, Technical University of Denmark	Denmark, United Kingdom	—
4	Anion-Exchange Membrane Water Electrolyzers (2022)	Forschungszentrum Jülich GmbH, National Research Council of Canada	Canada, Germany	—
5	Clean and Affordable Hydrogen Fuel from Alkaline Water Splitting: Past, Recent Progress, and Future Prospects (2021)	University of Science and Technology of China	China	—
6	Combining theory and experiment in electrocatalysis: Insights into materials design (2017)	Institute of Materials Research and Engineering, Agency for Science, Technology and Research (A*STAR), SLAC National	Denmark, Singapore, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
		Accelerator Laboratory, Stanford University		
7	Self-Supported Transition-Metal-Based Electrocatalysts for Hydrogen and Oxygen Evolution (2020)	Nankai 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).

Contribution 2

Claim — Contribution 2

The researcher developed a low-cost, green hydrothermal method to synthesize nitrogen-doped carbon nanodots for label-free fluorescent detection of copper ions.

The researcher established a foundational approach for synthesizing nitrogen-doped, carbon-rich polymer nanodots via hydrothermal treatment of grass. This work, published in Advanced Materials in 2012, introduced these nanodots as an effective platform for the label-free fluorescent sensing of Cu(II) ions.

This line of work appears to address the need for sustainable, low-cost materials in chemical sensing. By utilizing grass as a precursor through a green hydrothermal route, the research suggests a novel alternative to more complex or expensive synthesis methods for creating photoluminescent nanomaterials.

The significance of this contribution is evidenced by its substantial citation count of 1687. Furthermore, analysis of citing literature indicates that 100% of the classified citations originate from independent researchers, demonstrating broad adoption and impact across the scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 9

CORE PAPER

Hydrothermal treatment of grass: a low-cost, green route to nitrogen-doped, carbon-rich, photoluminescent polymer nanodots as an effective fluorescent sensing platform for label-free detection of Cu(II) ions.

2012 · Advanced Materials · 1,687 citations (GS)

Field-normalised: 1,394 Semantic Scholar citations place it in the top 1% of Environmental Science papers from 2012 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Carbon Nanomaterial Fluorescent Probes and Their Biological Applications (2024)	California Institute of Technology, Janelia Research Campus, Howard Hughes Medical Institute	United States	—
2	Carbon Quantum Dots: Properties, Preparation, and Applications (2024)	Henan Polytechnic University	China	Background
3	Evolution and Synthesis of Carbon Dots: From Carbon Dots to Carbonized Polymer Dots (2019)	Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of	China, P. R. China, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
		Sciences, Jilin University, National Institutes of Health		
4	Carbon quantum dots and their applications (2014)	National University of Singapore	Singapore	—
5	Quantum dots: an overview of synthesis, properties, and applications (2023)	Indian Institute of Technology Bombay	India	—
6	Biomass-Based Carbon Dots: Current Development and Future Perspectives (2021)	Newcastle University	United Kingdom	—
7	Green Carbon Dots: Synthesis, Characterization, Properties and Biomedical Applications (2023)	Ege University, Institute of Pharmaceutical Research, GLA University, Sabanci University	India, Malaysia, Saudi Arabia	—
8	The photoluminescence mechanism in carbon dots (graphene quantum dots, carbon nanodots, and polymer dots): current state and future perspective (2015)	Jilin University	China, P. R. China	**Methodology**
9	Highly Photoluminescent Carbon Dots for Multicolor Patterning, Sensors, and Bioimaging (2013)	Jilin University	China, P. R. 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).

Citing-text excerpts — how the field used this work

METHODOLOGY The photoluminescence mechanism in carbon dots (graphene quantum dots, carbon nanodots, and polymer dots): current state and future perspective

"synthesized PDs by a grass hydrothermal route [13]."

Contribution 3

Claim — Contribution 3

The researcher developed an economical, green synthesis method for fluorescent carbon nanoparticles, enabling sensitive and selective detection of Mercury(II) ions.

The researcher's contribution centers on the 2012 publication in Analytical Chemistry, which introduced an economical and green synthesis approach for fluorescent carbon nanoparticles. This work established a novel platform for the sensitive and selective detection of Mercury(II) ions, addressing the need for cost-effective and environmentally friendly analytical probes.

This line of work appears to address the challenge of developing sustainable nanomaterials for environmental monitoring. By focusing on green synthesis, the research suggests a shift toward more eco-friendly production methods while maintaining high sensitivity for heavy metal detection, a critical area in environmental chemistry.

The significance of this contribution is evidenced by its substantial citation count of 1,279. Furthermore, analysis of citing literature indicates that 100% of the classified citations originate from independent researchers, demonstrating broad adoption and impact across the scientific community beyond the researcher's immediate network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Economical, Green Synthesis of Fluorescent Carbon Nanoparticles and Their Use as Probes for Sensitive and Selective Detection of Mercury(II) Ions

2012 · Analytical Chemistry · 1,279 citations (GS)

Field-normalised: 1,026 Semantic Scholar citations place it in the top 1% of Chemistry papers from 2012 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Biomass-derived carbon dots: synthesis, modification and application in batteries (2025)	Central South University, Changsha University of Science and Technology	China	—
2	Carbon quantum dots and their applications (2014)	National University of Singapore	Singapore	—
3	Biomass-Based Carbon Dots: Current Development and Future Perspectives (2021)	Newcastle University	United Kingdom	—
4	Green Carbon Dots: Synthesis, Characterization, Properties and Biomedical Applications (2023)	Ege University, Institute of Pharmaceutical Research, GLA University, Sabanci University	India, Malaysia, Saudi Arabia	**Influential**

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
Technical University of Denmark	Denmark	SCImago #404 · THE 121 · QS 107	4
University of Science and Technology of China	China	SCImago #77 · THE 51 · QS =132	3
SLAC National Accelerator Laboratory	United States	SCImago #728	3
Jilin University	P. R. China	SCImago #117 · QS =473	3
Chinese Academy of Sciences	China	SCImago #2	2
California Institute of Technology	United States	SCImago #449 · THE 7 · QS 10	2
Kent State University	United States	SCImago #3024 · QS 1001-1200	2
Manchester Metropolitan University	United Kingdom	SCImago #1913 · THE 601–800 · QS =643	2
Stanford University	United States	SCImago #18 · THE =5 · QS 3	2
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	2
University of Electronic Science and Technology of China	China	SCImago #129 · THE 301–350 · QS =519	2
Nanyang Technological University	Singapore	SCImago #137	1
Changsha University of Science and Technology	China	SCImago #1693 · THE 1001–1200	1

Institution	Country	World ranking	Citing papers
King Saud University	Saudi Arabia	SCImago #264 · THE 251–300 · QS 143	1
Beijing Institute of Technology	China	SCImago #170 · THE 201–250 · QS =259	1

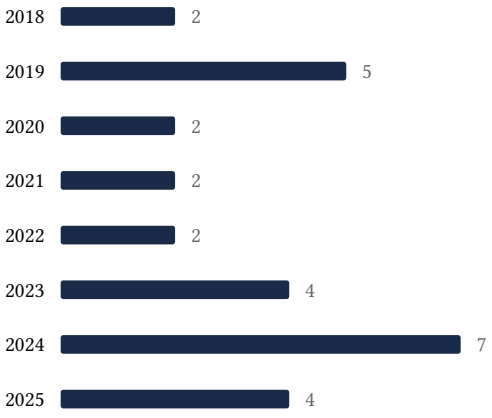
Geographic distribution of citing authors

Country	Citing papers
China	15
United States	9
United Kingdom	4
Denmark	4
Saudi Arabia	3
Singapore	3
P. R. China	3
Germany	3
India	3
Australia	2
Canada	2
South Korea	2

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	Self-supported nanoporous cobalt phosphide nanowire arrays: an efficient 3D hydrogen-evolving cathode over the wide range of pH 0–14	7	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Hydrothermal treatment of grass: a low-cost, green route to nitrogen-doped, carbon-rich, photoluminescent polymer nanodots as an effective fluorescent sensing platform for label-free detection of Cu(II) ions.	9	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Economical, Green Synthesis of Fluorescent Carbon Nanoparticles and Their Use as Probes for Sensitive and Selective Detection of Mercury(II) Ions	4	Dhanasar — Prong 2 (well-positioned)