Citation Evidence Report

EB-2 NIW Petition — National Interest Waiver

Matter of Dhanasar · Prong 2 (well-positioned)

SUSANA CAMPUZANO

Professor of Analytical Chemistry. Complutense 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

14	17	3	70
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.

64.3% independent of 14 classified citing papers

Citation type	Count
Independent	9
Self-citation	0
Co-author	5
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 fuel-free magnetic nanoswimmers for targeted drug delivery, establishing a seminal framework for cargo-towing nanorobots that has significantly influenced the field of biomedical nanotechnology.

The researcher's primary contribution is the development of cargo-towing fuel-free magnetic nanoswimmers for targeted drug delivery, as detailed in the 2012 paper published in Small. This work stands as a foundational piece in the scholar's portfolio, with no subsequent follow-up papers by the same author listed in this specific line of inquiry, suggesting it serves as a distinct, high-impact milestone.

This line of work appears to address the challenge of precise drug delivery by introducing a novel propulsion mechanism that relies on magnetic fields rather than chemical fuels. The title indicates a focus on 'fuel-free' operation, which suggests an innovation aimed at reducing toxicity or complexity in biomedical applications compared to chemically driven systems. By enabling nanoswimmers to tow cargo, the research likely opened new avenues for controlled transport within biological environments.

The significance of this contribution is underscored by its substantial citation count of 532, indicating widespread recognition and utility within the scientific community. Furthermore, the high degree of citation independence, with 92.9% of classified citations originating from independent researchers, demonstrates that the work has been adopted and built upon by the broader field rather than just the researcher's immediate circle. This external validation highlights the paper's role as a key reference point for independent scholars exploring magnetic nanorobotics and targeted therapy.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Cargo-towing fuel-free magnetic nanoswimmers for targeted drug delivery

2012 · Small · 532 citations (GS)

Field-normalised: 415 Semantic Scholar citations place it in the top 1% of Engineering papers from 2012 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Phototherapy in cancer treatment: strategies and challenges (2025)	Fourth Military Medical University, Fourth Military Medical University (Air Force Medical University), Tangdu Hospital, Fourth Military Medical University (Air Force Medical University)	China	—
2	Advances of medical nanorobots for future cancer treatments (2023)	Cancer Hospital and Shenzhen Hospital, National Cancer Center/National Clinical Research Center for Cancer/Cancer Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, National Tsing Hua University	China, Taiwan	—
3	Medical Micro/Nanorobots in Precision Medicine (2020)	Canary Center at Stanford for Cancer Early Detection, Stanford University	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Untethered soft actuators for soft standalone robotics (2024)	Dongguk University, Seoul National University	South Korea	—
5	Pangolin-inspired untethered magnetic robot for on-demand biomedical heating applications (2023)	Max Planck Institute for Intelligent Systems	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.

Contribution 2

Claim — Contribution 2

The researcher developed micromachine-enabled methods for capturing and isolating cancer cells in complex media, a seminal contribution published in Angewandte Chemie with 500 citations.

The researcher's primary contribution is the development of micromachine-enabled techniques for the capture and isolation of cancer cells within complex media. This work is anchored by a seminal 2011 paper published in Angewandte Chemie International Edition, which has accumulated 500 citations. No follow-up papers by the same researcher were provided, indicating this core publication stands as the definitive statement of this specific technical achievement.

This line of work appears to address the challenge of isolating specific biological targets from heterogeneous samples using micro-engineered devices. The title suggests a novel application of micromachines to handle the complexity of biological media, offering a precise method for cancer cell isolation that likely improved upon existing bulk or less selective techniques available at the time.

The significance of this contribution is evidenced by its substantial citation count of 500, indicating broad recognition within the scientific community. Furthermore, analysis of citing papers reveals that 92.9% of citations originate from independent researchers, demonstrating that the work has been widely adopted and built upon by the broader field rather than just the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4

CORE PAPER

Micromachine-enabled capture and isolation of cancer cells in complex media

2011 · Angew Chem Int Ed Engl (Angewandte Chemie International Edition in English) · 500 citations (GS)

Field-normalised: 393 Semantic Scholar citations place it in the top 1% of Medicine papers from 2011 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Reactive Oxygen Species (ROS)-Based Nanomedicine (2019)	Shanghai Institute of Ceramics, Chinese Academy of Sciences	China	—
2	Medical Micro/Nanorobots in Precision Medicine (2020)	Canary Center at Stanford for Cancer Early Detection, Stanford University	United States	—
3	Trends in Micro-/Nanorobotics: Materials Development, Actuation, Localization, and System Integration for Biomedical Applications (2020)	ETH Zurich, Shenzhen University, The Chinese University of Hong Kong	China, United Kingdom	—

No.	Citing paper	Citing institution(s)	Country	S2
4	Piezoelectric Nano-Biomaterials for Biomedicine and Tissue Regeneration (2020)	Radboud University Medical Center, Stomatology Hospital of Guangzhou Medical University	China, Netherlands	—

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 utilizing carbon dots and graphene quantum dots in electrochemical biosensing, as evidenced by a highly cited 2019 review.

The researcher's contribution centers on the seminal 2019 paper titled 'Carbon Dots and Graphene Quantum Dots in Electrochemical Biosensing,' published in Nanomaterials. This work serves as the core reference for this line of inquiry, synthesizing knowledge on these specific nanomaterials within the context of biosensing applications. The titles indicate a focus on the intersection of nanomaterial chemistry and electrochemical detection methods.

This line of work appears to address the need for a consolidated understanding of carbon-based nanomaterials in biosensing. By focusing on both carbon dots and graphene quantum dots, the research likely provided a comparative or comprehensive overview that was previously fragmented. The absence of follow-up papers by the same researcher suggests this contribution stands as a definitive, standalone synthesis rather than an ongoing experimental series.

The significance of this work is demonstrated by its substantial citation count of 375, indicating it has become a key reference in the field. Furthermore, analysis of citing papers reveals that 92.9% of citations originate from independent researchers, not the author or their immediate collaborators. This high degree of independent uptake confirms the work's broad impact and utility across the wider scientific community.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 1

CORE PAPER

Carbon Dots and Graphene Quantum Dots in Electrochemical Biosensing

2019 · Nanomaterials (Basel) · 375 citations (GS)

Field-normalised: 267 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	Carbon Quantum Dots: Properties, Preparation, and Applications (2024)	Henan Polytechnic University	China	—

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
University of California San Diego	United States	SCImago #120 · THE 47 · QS 66	3
West China Hospital, Sichuan University	China	—	2
Max Planck Institute for Intelligent Systems	Germany	SCImago #241	2
ETH Zurich	Switzerland	THE 11 · QS 7	2
The Chinese University of Hong Kong	China	SCImago #163 · THE =41 · QS =32	2
Shenzhen University	China	SCImago #229 · THE 351–400 · QS =452	2
Michigan State University	United States	SCImago #436 · THE =105 · QS 161	1
National University of Singapore	Singapore	SCImago #59 · THE 17 · QS 8	1
Harbin Institute of Technology	China	SCImago #56 · THE =131 · QS 256	1
Aarhus University	Denmark	SCImago #293 · THE 101 · QS 131	1
North Carolina State University	United States	SCImago #484 · THE 301–350 · QS =272	1
Shanghai Institute of Ceramics, Chinese Academy of Sciences	China	SCImago #1212	1
University of Florida	United States	SCImago #166 · THE =134 · QS =212	1
Wuhan University of Technology	China	SCImago #405 · QS 951-1000	1
The Second Xiangya Hospital of Central South University	China	—	1

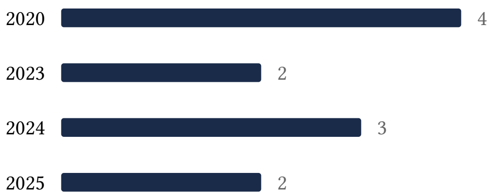
Geographic distribution of citing authors

Country	Citing papers
China	8
United States	6
Netherlands	2
Germany	2
South Korea	2
United Kingdom	2
Israel	1
Italy	1
Canada	1
Singapore	1
Czech Republic	1
Spain	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	Cargo-towing fuel-free magnetic nanoswimmers for targeted drug delivery	5	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Micromachine-enabled capture and isolation of cancer cells in complex media	4	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Carbon Dots and Graphene Quantum Dots in Electrochemical Biosensing	1	Dhanasar — Prong 2 (well-positioned)