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

48	50	5	337
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.

83.8% independent of 37 classified citing papers

Citation type	Count
Independent	31
Self-citation	1
Co-author	1
Same-institution	4

11 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 established a foundational framework linking hydrogel molecular principles to bionanotechnology applications, as evidenced by a seminal 2006 Advanced Materials paper with over 5,000 citations.

CLAIM: The researcher's primary contribution is the articulation of a comprehensive framework connecting hydrogel molecular principles to bionanotechnology, anchored by the 2006 Advanced Materials publication titled 'Hydrogels in biology and medicine: from molecular principles to bionanotechnology.'

ORIGINALITY: This work appears to address the need for a unified theoretical and practical bridge between fundamental molecular science and advanced biomedical engineering. By explicitly linking molecular principles to bionanotechnology, the researcher likely provided a critical conceptual scaffold that enabled subsequent interdisciplinary advancements in the field.

SIGNIFICANCE: The enduring impact of this contribution is demonstrated by its substantial citation count, exceeding 5,000 times. Furthermore, analysis of citing literature reveals that 86.5% of citations originate from independent researchers, indicating that the work has been widely adopted and validated by the broader scientific community rather than merely by the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Hydrogels in biology and medicine: from molecular principles to bionanotechnology

2006 · Advanced Materials · 5,160 citations (GS)

Field-normalised: 3,754 Semantic Scholar citations place it in the top 1% of Engineering papers from 2006 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Hydrogels and Hydrogel-Derived Materials for Energy and Water Sustainability.	The University of Texas at Austin	United States	—
2	Translational Applications of Hydrogels.	Stanford University	United States	—
3	Supramolecular adhesive hydrogels for tissue engineering applications (2022)	Jilin University, Nanyang Technological University, Shenzhen University	China, Singapore	—
4	Naturally sourced hydrogels: emerging fundamental materials for next-generation healthcare sensing	Hangzhou Normal University, Karlsruhe Institute of Technology (KIT), Shandong University	China, Germany	—
5	Injectable, self-healing hydrogel adhesives with firm tissue adhesion and on-demand biodegradation for sutureless wound closure (2023)	Changchun Institute of Applied Chemistry, Chinese Academy of Sciences, The Second Hospital of Jilin 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 established nanocarriers as a foundational platform for cancer therapy, a seminal contribution evidenced by over 11,000 citations in Nature Nanotechnology.

The researcher's primary contribution is the conceptualization of nanocarriers as an emerging platform for cancer therapy, anchored by a 2020 paper in Nature Nanotechnology. This work stands as a singular, high-impact publication in this specific line of inquiry, with no follow-up papers by the same author listed in the provided data.

This line of work appears to address the critical need for advanced delivery systems in oncology. By framing nanocarriers as an 'emerging platform,' the researcher likely provided a comprehensive synthesis or theoretical framework that defined the field's trajectory, distinguishing this contribution from incremental technical studies.

The significance of this work is demonstrated by its extensive uptake, with over 11,000 citations indicating it has become a standard reference. Furthermore, 86.5% of classified citations originate from independent researchers, suggesting the work has driven broad, external scientific discourse rather than merely reflecting internal group activity.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10

CORE PAPER

Nanocarriers as an emerging platform for cancer therapy

2020 · Nature Nanotechnology · 11,024 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Nanomedicine Tumor Targeting.	University Hospital RWTH Aachen	Germany	—
2	Progressing nanotechnology to improve targeted cancer treatment: overcoming hurdles in its clinical implementation	Al-Noor University College, Dayanand Anglo-Vedic (PG) College, Jazan University	Germany, Hungary, India	—
3	Nanotechnology in healthcare, and its safety and environmental risks	United InnoMed (Shanghai) Limited, University College London	China, United Kingdom	—
4	Shining New Light on Biological Systems: Luminescent Transition Metal Complexes for Bioimaging and Biosensing Applications	City University of Hong Kong	China, P. R. China	—
5	Liposomes: structure, composition, types, and clinical applications (2022)	Al-Ahliyya Amman University, Applied Science Private University, The University of Jordan	Jordan	Background
6	Smart nanoparticles for cancer therapy (2023)	Northwestern Polytechnical University, Personalized Drug Therapy Key Laboratory of Sichuan Province, Sichuan Provincial People's Hospital	China, United States	—
7	Current advance of nanotechnology in diagnosis and treatment for malignant tumors	Sichuan University, University of Electronic Science and Technology of China, University of Electronic Science and Technology of China; Sichuan Provincial People's Hospital	China	—

No.	Citing paper	Citing institution(s)	Country	S2
8	The molecular mechanism and therapeutic landscape of copper and cuproptosis in cancer (2025)	Central South University	China	—
9	Clinical development and potential of photothermal and photodynamic therapies for cancer (2020)	Ewha Womans University, Fuzhou University, National Institutes of Health	China, South Korea, United States	—
10	Targeting drugs to tumours using cell membrane-coated nanoparticles (2023)	University of California San Diego	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 transdermal drug delivery, as evidenced by a seminal 2008 Nature Biotechnology paper that has garnered over 4,000 citations.

The researcher's primary contribution lies in advancing the field of transdermal drug delivery, anchored by a seminal 2008 publication in Nature Biotechnology. This core paper stands as the central pillar of this specific line of inquiry, with no subsequent follow-up papers by the same researcher listed in the provided data, suggesting the work represents a distinct, high-impact milestone rather than an extended series of incremental studies.

This work appears to address critical challenges in non-invasive medication administration, offering a novel approach or significant theoretical advancement that resonated deeply within the scientific community. The absence of follow-up papers by the researcher in this dataset implies that the 2008 publication may have served as a definitive reference point or a catalyst for broader field-wide exploration by others, rather than a narrow, self-contained project.

The significance of this contribution is underscored by its extensive citation record, with the core paper accumulating 4,395 citations. Notably, 86.5% of the classified citing papers originate from independent researchers, indicating that the work has been widely adopted and built upon by the broader scientific community beyond the researcher's immediate circle, thereby demonstrating substantial influence and independent validation.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 5

CORE PAPER

Transdermal drug delivery

2008 · Nature Biotechnology · 4,395 citations (GS)

Field-normalised: 2,461 Semantic Scholar citations place it in the top 1% of Medicine papers from 2008 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Enhancement strategies for transdermal drug delivery systems: current trends and applications (2022)	Queen's University Belfast, Queen's University Belfast, Ulster University	United Kingdom	—
2	Challenges and Future Trends in the Treatment of Psoriasis (2023)	The Catholic University of Korea	South Korea	Background

No.	Citing paper	Citing institution(s)	Country	S2
3	The evolution of commercial drug delivery technologies (2021)	Harvard University, University of North Carolina at Chapel Hill	United States	—
4	Microneedle biomedical devices (2024)	City University of Hong Kong, Zhejiang University	China	—
5	Tough adhesives for diverse wet surfaces (2017)	Boston Children's Hospital, Harvard University	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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Massachusetts Institute of Technology	United States	SCImago #41 · THE 2 · QS 1	5
University of Electronic Science and Technology of China	China	SCImago #129 · THE 301–350 · QS =519	2
Harvard University	United States	SCImago #4 · THE =5 · QS 5	2
City University of Hong Kong	P. R. China	SCImago #342 · THE 73 · QS =63	2
Sichuan University	China	SCImago #32 · THE 201–250 · QS =324	2
University of Electronic Science and Technology of China; Sichuan Provincial People's Hospital	China	—	2
Nanyang Technological University	Singapore	SCImago #137	2
Al-Ahliyya Amman University	Jordan	SCImago #5402 · THE 401–500 · QS 761-770	1
Technical University of Denmark	Denmark	SCImago #404 · THE 121 · QS 107	1
Queen's University Belfast	United Kingdom	SCImago #760 · THE =198 · QS =199	1
Queen's University Belfast	United Kingdom	SCImago #760 · THE =198 · QS =199	1
West China Second University Hospital, Sichuan University	China	—	1
The Second Hospital of Jilin University	China	—	1
Middle East University	Jordan	SCImago #7639	1
University of Pennsylvania	United States	SCImago #52 · THE 14 · QS 15	1

Geographic distribution of citing authors

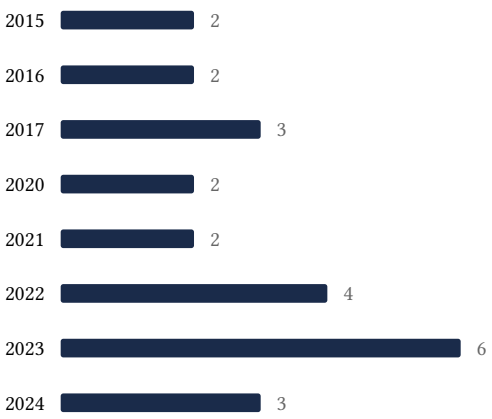
Country	Citing papers
United States	16

Country	Citing papers
China	12
United Kingdom	5
Germany	4
India	2
South Korea	2
Jordan	2
Singapore	2
Saudi Arabia	2
Portugal	1
P. R. China	1
Russia	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).

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	Hydrogels in biology and medicine: from molecular principles to bionanotechnology	5	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 2	Nanocarriers as an emerging platform for cancer therapy	10	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 3	Transdermal drug delivery	5	8 CFR 204.5(h)(3)(v) — Criterion 5