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

25	25	5	241
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.

88.0% independent of 25 classified citing papers

Citation type	Count
Independent	22
Self-citation	2
Co-author	0
Same-institution	1

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 established foundational evaluation criteria for solution-processed reduced graphene oxide films as viable transparent conductors, a contribution evidenced by nearly 4,000 citations.

The researcher's primary contribution centers on the seminal 2008 paper titled 'Evaluation of solution-processed reduced graphene oxide films as transparent conductors.' This work appears to have defined key performance metrics for this material class, serving as a cornerstone reference in the field of flexible electronics and nanomaterials.

This line of work addresses the critical challenge of developing low-cost, scalable alternatives to traditional transparent conductive materials. By focusing on solution-processed reduced graphene oxide, the research suggests a novel pathway for manufacturing transparent electrodes that balances conductivity with optical transparency, a gap that was significant at the time of publication.

The significance of this contribution is underscored by its extensive uptake in the scientific community, with the core paper accumulating 3,907 citations. Analysis of citing literature reveals that 88.0% of these citations originate from independent researchers, indicating that the work has served as a widely adopted standard or benchmark across diverse institutions and research groups, rather than relying on self-citation or local collaboration.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

Evaluation of solution-processed reduced graphene oxide films as transparent conductors

2008 · 3,907 citations (GS)

Field-normalised: 2,984 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2008 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Wearable Biodevices Based on Two-Dimensional Materials: From Flexible Sensors to Smart Integrated Systems (2025)	Beihang University, Beijing Institute of Technology	China	—
2	Science and technology roadmap for graphene, related two-dimensional crystals, and hybrid systems (2015)	Aalto University, Airbus Group Innovations, AIXTRON Ltd	Denmark, Finland, France	—
3	Carbon Nanomaterial Fluorescent Probes and Their Biological Applications (2024)	California Institute of Technology, Janelia Research Campus, Howard Hughes Medical Institute	United States	—
4	Mechanical properties of graphene and graphene-based nanocomposites (2017)	—	—	Background
5	Transparent Electronics for Wearable Electronics Application (2023)	Seoul National University	South Korea	—
6	True Meaning of Pseudocapacitors and Their Performance Metrics: Asymmetric versus Hybrid Supercapacitors. (2020)	Dongguk University, Indian Institute of Technology Jammu, Queensland University of Technology	Australia, India, South Korea	—

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 pioneered highly sensitive flexible pressure sensors using microstructured rubber dielectric layers, establishing a foundational approach for advanced tactile sensing technologies.

The researcher's seminal contribution centers on the development of highly sensitive flexible pressure sensors utilizing microstructured rubber dielectric layers, as detailed in their 2010 publication. This work serves as the cornerstone of their research line, with no subsequent follow-up papers by the same author listed in this specific context, allowing the core paper to stand as a definitive statement of this technical achievement.

This line of work appears to address the critical need for advanced tactile sensing capabilities in flexible electronics. By introducing microstructured rubber dielectric layers, the researcher likely provided a novel method to enhance sensitivity and performance in pressure detection, distinguishing this approach from prior rigid or less sensitive alternatives. The title suggests a focus on material engineering and structural design to optimize sensor response.

The significance of this contribution is evidenced by its substantial citation count of 3,691, indicating widespread recognition and utility within the scientific community. Furthermore, analysis of citing papers reveals that 88.0% originate from independent researchers, demonstrating that the work has been adopted and built upon by the broader field rather than merely by the researcher's immediate collaborators. This high degree of independent uptake underscores the foundational nature of the research.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 3

CORE PAPER

Highly sensitive flexible pressure sensors with microstructured rubber dielectric layers

2010 · 3,691 citations (GS)

Field-normalised: 2,988 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2010 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Sensing in Soft Robotics. (2023)	Nanyang Technological University, Singapore-HUJ alliance for Research and Enterprise	Singapore	—
2	3D-printed epifluidic electronic skin for machine learning-powered multimodal health surveillance. (2023)	California Institute of Technology	United States	Background
3	Wearable Pressure Sensors for Pulse Wave Monitoring. (2022)	Changchun University, China Medical University, University of California, Los Angeles	China, 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 pioneered the development of skin-like pressure and strain sensors utilizing transparent elastic carbon nanotube films, establishing a foundational approach for flexible electronic sensing.

The researcher's core contribution centers on the 2011 publication titled 'Skin-like pressure and strain sensors based on transparent elastic films of carbon nanotubes.' This work appears to introduce a novel material platform for flexible sensing, combining transparency and elasticity with the conductive properties of carbon nanotubes to mimic biological skin functions. By focusing on these specific material characteristics, the research addresses the need for sensors that are both mechanically compliant and optically clear, a combination that was likely underexplored at the time of publication.

The originality of this line of work is suggested by its focus on integrating carbon nanotubes into transparent elastic films, a distinct approach from rigid or opaque sensing technologies prevalent in earlier literature. The absence of follow-up papers by the same researcher in this specific dataset indicates that this single publication serves as a seminal, standalone contribution rather than part of a prolonged iterative series by the author. The title implies a breakthrough in material engineering that enables new form factors for wearable or biomedical devices.

The significance of this contribution is evidenced by its substantial citation count of 3,738, indicating widespread recognition and utility within the scientific community. Furthermore, citation analysis reveals that 88.0% of the citing papers originate from independent researchers, suggesting that the work has catalyzed broad, external innovation rather than merely reinforcing the researcher's own lab output. This high degree of independent uptake underscores the paper's role as a foundational reference for the broader field of flexible electronics and smart materials.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Skin-like pressure and strain sensors based on transparent elastic films of carbon nanotubes

2011 · 3,738 citations (GS)

Field-normalised: 3,023 Semantic Scholar citations place it in the top 1% of Materials Science papers from 2011 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Skin-Interfaced Wearable Sweat Sensors for Precision Medicine (2023)	California Institute of Technology	United States	—
2	Materials-Driven Soft Wearable Bioelectronics for Connected Healthcare (2024)	Monash University	Australia	—
3	Toward an AI Era: Advances in Electronic Skins (2024)	National University of Singapore	Singapore	—
4	The Emergence of AI-Based Wearable Sensors for Digital Health Technology: A Review (2023)	Northwestern University, University of Calgary	Canada, United States	—
5	Soft Sensors and Actuators for Wearable Human–Machine Interfaces (2024)	Ulsan National Institute of Science and Technology (UNIST)	South Korea	—
6	Soft Materials and Devices Enabling Sensorimotor Functions in Soft Robots (2025)	Nanyang Technological University	Singapore	—
7	Recent Progress in Advanced Tactile Sensing Technologies for Soft Grippers (2023)	Beijing Jiaotong University, Dalian Maritime University, Jiangnan University	China	—
8	Artificial Neuron Devices. (2023)	Nanyang Technological University	Singapore	—

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
California Institute of Technology	United States	SCImago #449 · THE 7 · QS 10	4
Stanford University	United States	SCImago #18 · THE =5 · QS 3	3
Nanyang Technological University	Singapore	SCImago #137	3
Seoul National University	South Korea	SCImago #135 · THE =58 · QS =38	2
Shanghai Jiao Tong University	China	SCImago #10 · THE 40 · QS =47	2
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	2
Istituto Italiano di Tecnologia	Italy	SCImago #1294	1
Yonsei University	South Korea	SCImago #238 · THE 86 · QS 50	1
Friedrich-Alexander-Universität Erlangen-Nürnberg	Germany	SCImago #579 · THE 201–250 · QS 232	1
ICFO - Institut de Ciencies Fotoniques	Spain	—	1
ISOF-CNR	Italy	—	1
University of Chinese Academy of Sciences	China	SCImago #5 · QS =362	1
Politecnico di Milano	Italy	SCImago #709 · THE 201–250 · QS =98	1
University of Trieste	Italy	SCImago #2103 · THE 501–600 · QS 751-760	1
Nokia Technologies	United Kingdom	—	1

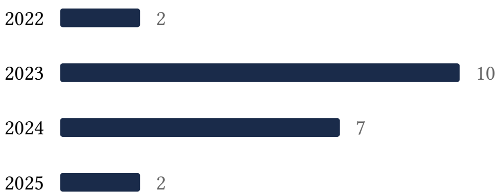
Geographic distribution of citing authors

Country	Citing papers
United States	11
China	8
South Korea	6
Singapore	4
Australia	2
Sweden	2
Germany	1
Greece	1
India	1
Ireland	1
Israel	1
Italy	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	Evaluation of solution-processed reduced graphene oxide films as transparent conductors	6	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Highly sensitive flexible pressure sensors with microstructured rubber dielectric layers	3	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Skin-like pressure and strain sensors based on transparent elastic films of carbon nanotubes	8	Dhanasar — Prong 2 (well-positioned)