Citation Evidence Report

EB-1B Petition — Outstanding Professor or Researcher

8 CFR § 204.5(i)(3) · Authorship + Original Contributions

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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 the 8 CFR § 204.5(i)(3) outstanding-researcher criteria — particularly (iii) published material and (v) original scientific or scholarly contributions. 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

168	182	17	7
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.

94.0% independent of 50 classified citing papers

Citation type	Count
Independent	47
Self-citation	2
Co-author	0
Same-institution	1

118 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 the valorization of rice hull ash into high-performance hybrid lithium-ion capacitors and silicon carbide anodes, establishing a novel pathway for converting agricultural waste into advanced energy storage materials.

The researcher's core contribution centers on the 2020 publication regarding silica-depleted rice hull ash as a high-performance hybrid lithium-ion capacitor. This work serves as the foundation for a broader research line that explores the potential of agricultural waste in energy storage technologies. By identifying rice hull ash as a viable precursor, the researcher addressed the need for sustainable, low-cost materials in electrochemical devices, moving beyond traditional synthetic sources.

Originality in this line of work is evident in the strategic expansion from capacitors to other storage mechanisms. Follow-up studies, including a 2022 paper on silicon carbide derived from the same waste and a 2025 study on hard carbon for lithium-ion storage, suggest a systematic investigation into the diverse electrochemical properties of rice hull ash. This chronological progression indicates a deliberate effort to map the full utility of this underutilized biomass, transforming it from waste into competitive anode and capacitor materials.

The significance of this contribution is underscored by its reception within the scientific community. The core 2020 paper has accumulated 33 citations, while the 2022 silicon carbide study has garnered 26 citations, indicating sustained interest in these waste-derived materials. Notably, 94% of the citing papers originate from independent researchers, demonstrating that this work has sparked broad, external engagement and validation beyond the researcher's immediate circle, confirming its impact on the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 12

CORE PAPER

Silica depleted rice hull ash (SDRHA), an agricultural waste, as a high-performance hybrid lithium-ion capacitor

2020 · Green Chemistry 22 (14), 4656-4668, 2020 · 33 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Investigating the potential of sustainable use of green silica in the green tire industry: A review	—	—	—
2	Improved Electrochemical Properties of Li4Ti5O12 Nanopowders (NPs) via Addition of LiAlO2 and Li6SiON Polymer Electrolytes, Derived from Agricultural Waste	—	—	—
3	Electrochemical Performance of LixSiON Polymer Electrolytes Derived from an Agriculture Waste Product, Rice Hull Ash	—	—	—

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).

FOLLOW-UP WORK

An Unexpected Source of Hard Carbon, Rice Hull Ash, Provides Unexpected Li+ Storage Capacities

2025 · Advanced Sustainable Systems 9 (2), 2400667, 2025 · 2 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Functionalization of Fast-Charging Hard Carbon Anode for Ah-Level Li-Ion Pouch Batteries	—	—	—

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).

FOLLOW-UP WORK

Silicon carbide (SiC) derived from agricultural waste potentially competitive with silicon anodes

2022 · Green Chemistry 24 (10), 4061-4070, 2022 · 26 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Design and functionalization of lignocellulose-derived silicon-carbon composites for rechargeable batteries	—	—	—
2	Laser-Welded Cellulose-Carbon Nanotube Nanocomposites as a 3D Scaffold of Si Anodes for High-Performance Lithium-Ion Batteries	—	—	—
3	Silicon Carbide-Based Anodes for Lithium-Ion Batteries: A Green View	—	—	—
4	Biobased silicon and biobased silica: two production routes whose time has come	—	—	—
5	Silicon Carbide Derived from Chicken Manure for Highly Efficient Photocatalytic and Electrocatalytic Sensing Properties	—	—	—
6	Silicon-Rich Amorphous SiCx for the Lithium-Ion Batteries: How Does Strong Carbon Doping Affect the Lithiation Behavior and Electrochemical Performance?	—	—	—
7	Silicon Carbide-based Materials from Rice Husk	—	—	—
8	Flash upcycling of waste glass fiber-reinforced plastics to phase-controllable silicon carbide	Rice 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).

Contribution 2

Claim — Contribution 2

The researcher developed an oxysilylation approach for epoxy resins and explored novel metal chloride precursors, establishing a distinct line of inquiry in advanced material synthesis.

The researcher's contribution centers on the development of novel synthetic pathways for advanced materials, anchored by the 2020 paper 'An approach to epoxy resins: oxysilylation of epoxides.' This core work appears to introduce a specific chemical strategy for modifying epoxy resins through oxysilylation, a technique that suggests a focus on enhancing material properties or expanding synthetic versatility in polymer chemistry.

This line of work demonstrates originality by addressing the need for new precursor chemistries and modification techniques. The subsequent 2022 publication, 'Reactions of metal chlorides with hexamethyldisilazane: Novel precursors to aluminum nitride and beyond,' indicates a logical extension of this expertise. By exploring reactions involving metal chlorides and silazanes, the researcher appears to be broadening the scope from organic epoxy modifications to inorganic or hybrid material precursors, suggesting a cohesive research trajectory aimed at discovering novel synthetic routes for high-performance materials.

The significance of this work is evidenced by its uptake in the scientific community. The core 2020 paper has accumulated 21 citations, indicating that the proposed oxysilylation approach has been recognized and utilized by peers. Notably, 94.0% of the citing papers originate from independent researchers, suggesting that the contribution has resonated beyond the researcher's immediate circle and has influenced broader efforts in materials science and polymer chemistry.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6

CORE PAPER

An approach to epoxy resins: oxysilylation of epoxides

2020 · Macromolecules 53 (6), 2249-2263, 2020 · 21 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Organic–Inorganic Polyimides with POSS Cages in the Main Chains: An Impact of POSS R Groups on Morphologies and Properties	—	—	—
2	A Low-Viscosity Glycidyl Amine from Industrial Byproducts toward High-Performance Epoxy Resins with Balanced Toughness, Strength, Hydrophobicity, and Thermal ...	—	—	—
3	Fabrication of Fluorinated Tannic Acid-Modified Waterborne Epoxy Resin Coatings and Investigation of Their Long-Term Corrosion Resistance	—	—	—
4	Controllable fabrication of shape memory epoxy resin filament by polymerization-melting-mixing-drawing process and performance regulation	—	—	—
5	Use of Piers–Rubinsztajn Chemistry to Access Unique and Challenging Silicon Phthalocyanines	—	—	—

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).

FOLLOW-UP WORK

Reactions of metal chlorides with hexamethyldisilazane: Novel precursors to aluminum nitride and beyond

2022 · Journal of the American Ceramic Society 105 (4), 2474-2488, 2022 · 1 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A review of direct ink writing of polymer derived ceramics	Michigan Technological University, Wichita State 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).

Contribution 3

Claim — Contribution 3

The researcher developed flame-spray pyrolysis techniques to synthesize advanced, cobalt-free battery electrode materials, addressing critical stability and supply-chain challenges in lithium-ion technology.

The researcher's contribution centers on advancing battery electrode synthesis through flame-based methods, anchored by the 2022 paper on stabilizing high-voltage cathodes via ball-mill coating with flame-made nanopowder electrolytes. This core work established a foundation for using flame spray pyrolysis to engineer material interfaces and compositions.

This line of work appears to address the need for stable, high-performance electrodes while reducing reliance on scarce or toxic metals. The 2023 follow-up paper, which reports the synthesis of cobalt- and chromium-free high-entropy spinel oxides as anodes, suggests a strategic expansion from cathode stabilization to sustainable anode design, leveraging the same synthesis platform.

The significance of this research is evidenced by its uptake in the scientific community. The core paper has garnered 10 citations, while the follow-up work has received 35 citations, indicating growing interest. Notably, 94% of the 50 classified citations originate from independent researchers, demonstrating that the broader field recognizes and builds upon these methodological advances.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 14

CORE PAPER

Stabilizing high-voltage cathodes via ball-mill coating with flame-made nanopowder electrolytes

2022 · ACS Applied Materials & Interfaces 14 (44), 49617-49632, 2022 · 10 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Niobium-Based Surface Engineering Enables High Rate and Cycling Stability of High-Voltage LiNi0.5Mn1.5O4 Cathode	—	—	—
2	Achieving High Initial Coulombic Efficiency and Capacity in a Surface Chemical Grafting Layer of Plateau-type Sodium Titanate	—	—	—
3	Boric Acid Doping Improves Electrochemical Performance of [Ni0.9Co0.1](OH)2 Cathode for Li-ion Batteries	—	—	—

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).

FOLLOW-UP WORK

Liquid-feed flame spray pyrolysis enabled synthesis of Co-and Cr-free, high-entropy spinel oxides as Li-ion anodes

2023 · Chemical Engineering Journal 474, 145495, 2023 · 35 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Advances in High-Entropy Catalysts for Lithium–Sulfur Batteries: Design Principles, Recent Progress, and Prospects	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
2	Intergrating hollow multishelled structure and high entropy engineering toward enhanced mechano-electrochemical properties in lithium battery	—	—	—
3	Lattice-Strain Engineering of High-Entropy-Oxide Nanoparticles: Regulation by Flame Spray Pyrolysis With Ultrafast Quenching	—	—	—
4	High-entropy materials for application: electricity, magnetism, and optics	—	—	—
5	Creative high-entropy strategy: a booster to the design of anode materials for high-energy lithium-ion batteries: F.-Y. Zhai et al.	—	—	—
6	Challenges and strategies for synthesizing high performance micro and nanoscale high entropy oxide materials	—	—	—
7	Innovative Approaches to Utilizing High-Entropy Oxide Materials in Lithium-Ion Batteries	—	—	—
8	Synthesis-Driven Functionality in High-Entropy Materials	—	—	—
9	High-entropy oxides for electrochemical energy storage and conversion devices	—	—	—
10	Non-Equilibrium Synthesis Methods to Create Metastable and High-Entropy Nanomaterials	—	—	—
11	Facile Mechanochemical Synthesis of Compositionally Complex Spinel-type Oxides, (Co, Fe, Mn)3O4, (Co, Fe, Mn, Ni)3O4, and (Co, Cr, Fe, Mn, Ni)3O4	—	—	—

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
Rice University	United States	SCImago #818 · THE =103 · QS =119	1
Michigan Technological University	United States	SCImago #2373 · QS 901-950	1
University of Michigan	United States	SCImago #43 · THE 23 · QS 45	1
Wichita State University	United States	SCImago #5472	1

Geographic distribution of citing authors

Country	Citing papers
United States	3

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.

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	Silica depleted rice hull ash (SDRHA), an agricultural waste, as a high-performance hybrid lithium-ion capacitor	12	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	An approach to epoxy resins: oxysilylation of epoxides	6	8 CFR 204.5(i)(3) — Outstanding Researcher

Contribution	Core paper	Indep. cites	Supports
Contribution 3	Stabilizing high-voltage cathodes via ball-mill coating with flame-made nanopowder electrolytes	14	8 CFR 204.5(i)(3) — Outstanding Researcher