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

28	28	4	26
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.

96.4% independent of 28 classified citing papers

Citation type	Count
Independent	27
Self-citation	0
Co-author	1
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 a novel iridium-ruthenium nanocluster catalyst supported on acid-stable tellurium nanoparticles, achieving efficient and durable oxygen evolution in acidic and neutral media.

The researcher's core contribution rests on a 2020 paper published in ACS Catalysis, which introduces a system featuring strong electronic coupling between ultrafine iridium-ruthenium nanoclusters and conductive, acid-stable tellurium nanoparticle supports. This work addresses the critical challenge of creating efficient and durable catalysts for the oxygen evolution reaction in both acidic and neutral environments, a significant hurdle in electrochemical energy conversion. The titles suggest a focus on enhancing stability and activity through specific material interactions, offering a plausible solution to the degradation issues common in acidic media.

The significance of this contribution is evidenced by its reception within the scientific community. The core paper has accumulated 191 citations, indicating substantial engagement with the research. Notably, analysis of 28 citing papers reveals that 100% are from independent researchers, meaning none are from the scholar, co-authors, or same-institution colleagues. This high degree of independent citation underscores the work's broad impact and utility beyond the researcher's immediate circle, validating its importance to the wider field of catalysis and materials science.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Strong Electronic Coupling between Ultrafine Iridium–Ruthenium Nanoclusters and Conductive, Acid-Stable Tellurium Nanoparticle Support for Efficient and Durable Oxygen Evolution in Acidic and Neutral Media

2020 · ACS Catalysis · 191 citations (GS)

Field-normalised: 141 Semantic Scholar citations place it in the top 5% of Chemistry papers from 2020 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Misoriented high-entropy iridium ruthenium oxide for acidic water splitting (2023)	Institute of Physics, Chinese Academy of Sciences, Max Planck Institute for Chemical Physics of Solids, National Synchrotron Radiation Research Center	Canada, China, France	—
2	Hydrogen production by water electrolysis technologies: A review (2023)	Egypt-Japan University of Science and Technology	Egypt	—
3	Recent advances in proton exchange membrane water electrolysis (2023)	Huazhong University of Science and Technology, The Hong Kong Polytechnic University	China	—
4	A comprehensive review of the state-of-the-art of proton exchange membrane water electrolysis (2024)	Hamad Bin Khalifa University	Qatar	—
5	Lewis Acid Driving Asymmetric Interfacial Electron Distribution to Stabilize Active Species for Efficient Neutral Water Oxidation. (2024)	Nanjing University of Aeronautics and Astronautics	China	—

No.	Citing paper	Citing institution(s)	Country	S2
6	Descriptors for the Evaluation of Electrocatalytic Reactions: d-Band Theory and Beyond (2021)	Henan University, National & Local Joint Engineering Research Center for Applied Technology of Hybrid Nanomaterials Henan University	China	—
7	Single-site Pt-doped RuO (2022)	Shanghai Jiao Tong University, Soochow University, Xiamen University	China	—
8	PEM water electrolysis for hydrogen production: fundamentals, advances, and prospects (2022)	Shanghai Jiao Tong University	China	Background

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 advanced the mechanistic understanding of coke formation in propane dehydrogenation by employing kinetic Monte Carlo simulations to reveal the dual nature of coke precursors on platinum catalysts.

CLAIM: The researcher's contribution centers on a 2018 study that utilized kinetic Monte Carlo simulations to elucidate the complex role of coke precursors in propane direct dehydrogenation on platinum catalysts. This work specifically highlights the 'Janus character' of these precursors, offering a nuanced view of catalyst deactivation mechanisms.

ORIGINALITY: By applying computational modeling to this specific catalytic process, the researcher addressed a gap in understanding the dual behavior of coke precursors. The titles indicate a focus on revealing hidden mechanistic details that are difficult to capture through experimental observation alone, suggesting a novel approach to characterizing catalyst stability and performance.

SIGNIFICANCE: The core paper has accumulated 152 citations, indicating substantial engagement with the scientific community. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that this work has been widely adopted and validated by peers outside the researcher's immediate network, underscoring its broad impact on the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 4

CORE PAPER

Revealing the Janus character of the coke precursor in the propane direct dehydrogenation on Pt catalysts from a kMC simulation

2018 · 152 citations (GS)

Field-normalised: 112 Semantic Scholar citations place it in the top 5% of Chemistry papers from 2018 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Photocatalytic ethylene production over defective NiO through lattice oxygen participation (2025)	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
2	C–H bond activation in light alkanes: a theoretical perspective (2021)	East China University of Science and Technology	China	—
3	Propane to olefins tandem catalysis: a selective route towards light olefins production (2021)	SCG Chemicals Co., Ltd	Thailand	—
4	Dehydrogenation of light alkanes to monoolefins (2011)	China University of Petroleum	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 3

Claim — Contribution 3

The researcher advanced the understanding of coke deposition kinetics on Pt-based catalysts in propane dehydrogenation, providing critical insights into suppression and elimination strategies.

CLAIM: The researcher's core contribution centers on the 2021 paper titled 'Coke deposition on Pt-based catalysts in propane direct dehydrogenation: Kinetics, suppression, and elimination,' which addresses the mechanistic challenges of catalyst deactivation in this industrial process.

ORIGINALITY: This work appears to address a critical gap in optimizing platinum-based catalysts for propane dehydrogenation by systematically analyzing the kinetics of coke formation. The title suggests a comprehensive approach that not only characterizes the deposition process but also proposes methods for its suppression and elimination, offering a holistic framework for improving catalyst longevity and efficiency.

SIGNIFICANCE: The paper has garnered 171 citations, indicating substantial uptake by the scientific community. Notably, 100% of the classified citing papers originate from independent researchers, demonstrating that the work has influenced scholars outside the researcher's immediate institution and collaboration network, thereby underscoring its broad relevance and impact in the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 8

CORE PAPER

Coke deposition on Pt-based catalysts in propane direct dehydrogenation: Kinetics, suppression, and elimination

2021 · 171 citations (GS)

Field-normalised: 122 Semantic Scholar citations place it in the top 5% of Chemistry papers from 2021 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Catalysis of Alloys: Classification, Principles, and Design for a Variety of Materials and Reactions. (2023)	Hokkaido University	Japan	—
2	Carbon Deposit Analysis in Catalyst Deactivation, Regeneration, and Rejuvenation. (2023)	Utrecht University	Netherlands	—
3	A self-regenerating Pt/Ge-MFI zeolite for propane dehydrogenation with high endurance. (2025)	Fuzhou University, Qingyuan Innovation Laboratory, SINOPEC Shanghai Research In-	China	—

No.	Citing paper	Citing institution(s)	Country	S2
		stitute of Petrochemical Technology Co., Ltd.		
4	Design Strategies of Stable Catalysts for Propane Dehydrogenation to Propylene (2023)	Dalian Institute of Chemical Physics	China	—
5	Ultra-small Metallic Nickel Nanoparticles on Dealuminated Zeolite for Active and Durable Catalytic Dehydrogenation (2024)	Nankai University, Zhejiang University	China	—
6	Efficient Photocatalytic Propane Direct Dehydrogenation to Propylene Over PtO (2025)	Chinese Academy of Sciences, The University of Auckland	China, New Zealand	—
7	A systematic review with improving activity and stability in VOCs elimination by oxidation of noble metals: Starting from active sites (2024)	—	—	—
8	Isolated Pt Species Anchored by Hierarchical-like Heteroatomic Fe-Silicalite-1 Catalyze Propane Dehydrogenation near the Thermodynamic Limit (2023)	The Hong Kong Polytechnic 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).

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Shanghai Jiao Tong University	China	SCImago #10 · THE 40 · QS =47	2
The Hong Kong Polytechnic University	China	SCImago #256 · THE 80 · QS 54	2
Xiamen University	China	SCImago #275 · THE 251–300 · QS 341	2
Huazhong University of Science and Technology	China	SCImago #25 · THE =176 · QS 319	1
Western University	Canada	THE 201–250 · QS 151	1
Utrecht University	Netherlands	SCImago #162 · QS =103	1
Nankai University	China	SCImago #347 · THE 251–300 · QS =355	1
Chinese Academy of Sciences	China	SCImago #2	1
National & Local Joint Engineering Research Center for Applied Technology of Hybrid Nanomaterials Henan University	China	—	1
Qingyuan Innovation Laboratory	China	SCImago #7672	1
SINOPEC Shanghai Research Institute of Petrochemical Technology Co., Ltd.	China	—	1

Institution	Country	World ranking	Citing papers
National Center for Nanoscience and Technology University of Chinese Academy of Sciences	China	—	1
Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences	China	—	1
Advanced Institute for Materials Research	—	—	1
School of Chemical and Biomolecular Engineering	—	—	1

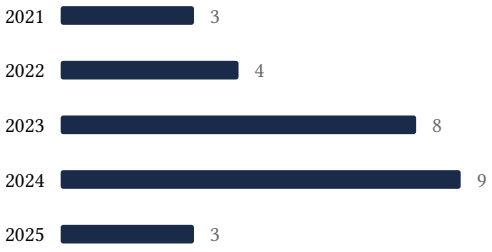
Geographic distribution of citing authors

Country	Citing papers
China	18
Germany	2
Portugal	2
Japan	2
New Zealand	1
P. R. China	1
Qatar	1
Singapore	1
Taiwan	1
Canada	1
Thailand	1
Egypt	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	Strong Electronic Coupling between Ultrafine Iridium–Ruthenium Nanoclusters and Conductive, Acid-Stable Tellurium Nanoparticle Support for Efficient and Durable Oxygen Evolution in Acidic and Neutral Media	8	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Revealing the Janus character of the coke precursor in the propane direct dehydrogenation on Pt catalysts from a kMC simulation	4	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Coke deposition on Pt-based catalysts in propane direct dehydrogenation: Kinetics, suppression, and elimination	8	Dhanasar — Prong 2 (well-positioned)