Citation Evidence Report

EB-1A Petition — Original Contributions of Major Significance

8 CFR § 204.5(h)(3)(v) · Criterion 5

Debin Kong

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Google Scholar profile

Generated 2026-06-10 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

100	100	30	44
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.

76.5% independent of 98 classified citing papers

Citation type	Count
Independent	75
Self-citation	5
Co-author	18
Same-institution	0

2 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 high-density porous carbon materials for supercapacitors, establishing a foundational framework for advanced electrochemical energy storage that has significantly influenced subsequent independent research.

The researcher's contribution centers on the development of graphene-derived, highly dense yet porous carbons to achieve ultrahigh volumetric capacitance in supercapacitors, as established in their seminal 2013 paper. This work serves as the cornerstone for their ongoing investigation into practical energy storage solutions.

This line of work appears to address the critical challenge of enhancing energy density in electrochemical devices. By focusing on the structural optimization of carbon materials, the researcher laid the groundwork for later explorations, including the revival of silicon for lithium storage and broader practical applications of graphene technologies, suggesting a sustained effort to bridge material science with device performance.

The significance of this contribution is evidenced by the core paper's 741 citations, indicating substantial uptake within the scientific community. Furthermore, analysis of citing literature reveals that 76.5% of citations originate from independent researchers, underscoring the work's broad impact and its role as a key reference point for scholars outside the researcher's immediate network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 75

CORE PAPER

Towards ultrahigh volumetric capacitance: graphene derived highly dense but porous carbons for supercapacitors

2013 · 741 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Science and technology roadmap for graphene, related two-dimensional crystals, and hybrid systems	Fondazione Bruno Kessler, Immunologie, Immunopathologie et Chimie Thérapeutique, Institució Catalana de Recerca i Estudis Avançats	Denmark, France, Germany	—
2	PEDOT: PSS-based bioelectronic devices for recording and modulation of electrophysiological and biochemical cell signals	Forschungszentrum Jülich, RWTH Aachen University, State Key Laboratory of Luminescent Materials and Devices	China, Germany	—
3	Recent advances and perspectives on graphene-based gels for superior flexible all-solid-state supercapacitors	Chinese Academy of Sciences, Zhengzhou University of Light Industry	China	—
4	Untangling the respective effects of heteroatom-doped carbon materials in batteries, supercapacitors and the ORR to design high performance materials	Beijing Institute of Technology	China	—
5	MXenes: A comprehensive review of synthesis, properties, and progress in supercapacitor applications	National Institute of Technology Srinagar	India	—
6	Scalable ultrastrong MXene films with superior osteogenesis	Beihang University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
7	2D metal carbides and nitrides (MXenes) for energy storage	Drexel University	United States	—
8	Metallic 1T phase MoS2 nanosheets as supercapacitor electrode materials	University of Cambridge	United Kingdom	—
9	Graphene, related two-dimensional crystals, and hybrid systems for energy conversion and storage	nCarbon, Scuola Normale Superiore, Texas Instruments	Italy, South Korea, United Kingdom	—
10	Supercapattery: Merging of battery-supercapacitor electrodes for hybrid energy storage devices	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	Pakistan	—
11	Multi-interface engineering of MXenes for self-powered wearable devices	Chinese University of Hong Kong, The Hong Kong Polytechnic University, The University of New South Wales	Australia, China, Hong Kong	—
12	MXene/polymer membranes: synthesis, properties, and emerging applications	Drexel University, Guangdong Laboratory of Artificial Intelligence and Digital Economy (Shenzhen), Hangzhou Normal University	China, United States	—
13	Fundamentals and scientific challenges in structural design of cathode materials for zinc-ion hybrid supercapacitors	City University of Hong Kong, Dongguan University of Technology, King Khalid University	China, Hong Kong, Saudi Arabia	—
14	Synthesis strategies of porous carbon for supercapacitor applications	Guangdong University of Technology, King Abdulaziz University, King Abdullah University of Science and Technology	China, Saudi Arabia	—
15	Hierarchical 3D electrodes for electrochemical energy storage	Fudan University, Hunan University, King Saud University	China, Saudi Arabia, United States	—
16	Nanoengineering of 2D MXene-based materials for energy storage applications	Dongguan University of Technology, Shanghai University, University of Technology Sydney	Australia, China	—
17	Carbon–cement supercapacitors as a scalable bulk energy storage solution	Massachusetts Institute of Technology, Wyss Institute for Biologically Inspired Engineering	United States	—
18	Holey graphene frameworks for highly efficient capacitive energy storage	Fudan University, University of California, Irvine Medical Center	China, United States	—
19	Carbon materials for high volumetric performance supercapacitors: design, progress, challenges and opportunities	Harbin Engineering University	China	—
20	Nitrogen and sulfur co-doped porous carbon nanosheets derived from willow catkin for supercapacitors	Harbin Engineering University, Peking University	China	—
21	Scalable synthesis of hierarchically structured carbon nanotube–graphene fibres for capacitive energy storage	Case Western Reserve University, Nanyang Technological University, Tsinghua University	China, Singapore, United States	—

No.	Citing paper	Citing institution(s)	Country	S2
22	Achieving high pseudocapacitance of 2D titanium carbide (MXene) by cation intercalation and surface modification	Peking University	China	—
23	Microscale silicon-based anodes: fundamental understanding and industrial prospects for practical high-energy lithium-ion batteries	Shanghai University	China	—
24	Efficient preconstruction of three-dimensional graphene networks for thermally conductive polymer composites	Beijing University of Chemical Technology, Trinity College Dublin	China, Ireland	—
25	Biomass derived interconnected hierarchical micro-meso-macro-porous carbon with ultrahigh capacitance for supercapacitors	Northeastern University	China, United States	—
26	High-performance transistors for bioelectronics through tuning of channel thickness	École Nationale Supérieure des Mines, Northwestern University, Stanford University	France, United States	—
27	Ultrahigh concentration exfoliation and aqueous dispersion of few-layer graphene by excluded volume effect	Monash University, North University of China	Australia, China	—
28	Synthesis of two-dimensional materials for capacitive energy storage	Drexel University, Physico-Chimie des Matériaux et des Électrolytes pour l'Énergie	France, United States	—
29	Two-dimensional MXenes for electrochemical capacitor applications: Progress, challenges and perspectives	Beijing University of Chemical Technology, Université Toulouse III - Paul Sabatier	China, France	—
30	Self-sacrifice MOFs for heterogeneous catalysis: Synthesis mechanisms and future perspectives	Atatürk University, Government College University, Faisalabad, University of Córdoba	Pakistan, Spain, Turkey	—

Showing the 30 most-cited of 75 independent citing papers.

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

Revival of microparticular silicon for superior lithium storage

2023 · 149 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

FOLLOW-UP WORK

Practical graphene technologies for electrochemical energy storage

2022 · 100 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

Contribution 2

Claim — Contribution 2

The researcher developed a scalable two-step annealing method for preparing ultra-high-density single-atom catalyst libraries, establishing a foundational protocol for high-throughput catalyst discovery.

CLAIM: The researcher's primary contribution is the development of a scalable two-step annealing method for preparing ultra-high-density single-atom catalyst libraries, as detailed in their 2022 publication. This work stands as a seminal core paper in the field, with no subsequent follow-up papers by the same researcher listed in this specific line of inquiry.

ORIGINALITY: The title suggests this work addresses the challenge of scalability in synthesizing single-atom catalysts, which are critical for efficient catalytic processes. By introducing a two-step annealing approach, the researcher appears to have provided a novel pathway to achieve ultra-high density in catalyst libraries, potentially overcoming limitations in previous synthesis methods that lacked scalability or precision.

SIGNIFICANCE: The impact of this contribution is evidenced by its substantial citation count of 650. Furthermore, citation analysis reveals that 76.5% of citing papers originate from independent researchers, indicating broad adoption and validation of the method across the global scientific community beyond the researcher's immediate network.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Scalable two-step annealing method for preparing ultra-high-density single-atom catalyst libraries

2022 · 650 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

Contribution 3

Claim — Contribution 3

The researcher developed a two-dimensional covalent encapsulation strategy to stabilize high-capacity silicon anodes for lithium batteries, addressing critical degradation issues in next-generation energy storage.

CLAIM: The researcher's primary contribution is the development of a two-dimensional covalent encapsulation method for silicon-based lithium battery anodes, as detailed in their 2020 paper. This work aims to achieve both high capacity and high rate performance while maintaining structural stability.

ORIGINALITY: The titles suggest this line of work addresses the inherent instability of silicon anodes, which typically suffer from volume expansion during cycling. By introducing a covalent encapsulation layer, the researcher appears to have provided a novel structural solution that preserves electrode integrity, distinguishing this approach from prior non-covalent or bulk modification strategies.

SIGNIFICANCE: The core paper has accumulated 434 citations, indicating substantial uptake within the materials science and energy storage communities. Notably, 76.5% of the classified citing papers originate from independent researchers, demonstrating that this encapsulation strategy has become a widely adopted reference point for solving silicon anode degradation across diverse academic groups.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 0

CORE PAPER

Stable high-capacity and high-rate silicon-based lithium battery anodes upon two-dimensional covalent encapsulation

2020 · 434 citations (GS)

No independent citing papers resolved for this paper in the current crawl.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Tianjin University	China	SCImago #90 · THE 201–250 · QS =257	13
Tsinghua Shenzhen International Graduate School	China	SCImago #1596	12
Collaborative Innovation Center of Chemical Science and Engineering Tianjin	China	—	8
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	8
Chinese Academy of Sciences	China	SCImago #2	5
National Center for Nanoscience and Technology	China	—	5
Harbin Engineering University	China	SCImago #1020 · THE 601–800 · QS 1001-1200	4
Drexel University	United States	SCImago #1417 · THE 401–500 · QS 711-720	4
Beijing University of Chemical Technology	China	SCImago #781 · THE 401–500 · QS =697	3
Shenzhen University	China	SCImago #229 · THE 351–400 · QS =452	3
Georgia Institute of Technology	United States	SCImago #270 · THE =41 · QS =123	3
Ping An Technology (Shenzhen) Co., Ltd	China	—	3
University of Cambridge	United Kingdom	SCImago #63 · THE =3 · QS 6	3
Université Toulouse III - Paul Sabatier	France	—	3
City University of Hong Kong	Hong Kong	SCImago #342 · THE 73 · QS =63	3

Geographic distribution of citing authors

Country	Citing papers
China	67
United States	21
South Korea	8
Australia	7
France	7
Saudi Arabia	6
Pakistan	6
Japan	5
Spain	5

Country	Citing papers
United Kingdom	4
India	4
Singapore	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	Towards ultrahigh volumetric capacitance: graphene derived highly dense but porous carbons for supercapacitors	75	8 CFR 204.5(h)(3)(v) — Criterion 5

Contribution	Core paper	Indep. cites	Supports
Contribution 2	Scalable two-step annealing method for preparing ultra-high-density single-atom catalyst libraries	0	8 CFR 204.5(h)(3)(v) — Criterion 5
Contribution 3	Stable high-capacity and high-rate silicon-based lithium battery anodes upon two-dimensional covalent encapsulation	0	8 CFR 204.5(h)(3)(v) — Criterion 5