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

340	361	11	5
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.

91.0% independent of 311 classified citing papers

Citation type	Count
Independent	283
Self-citation	0
Co-author	27
Same-institution	1

29 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 incoherent optoelectronic differentiation using optimized multilayer films, subsequently extending this framework to accelerate machine vision through multichannel meta-imagers.

The researcher established a foundational approach to incoherent optoelectronic differentiation based on optimized multilayer films, as detailed in their 2022 core publication. This work serves as the technical basis for subsequent advancements in the field.

This line of work appears to address the need for efficient optical processing methods. The progression from fundamental differentiation techniques in 2022 to multichannel meta-imagers for machine vision in 2024 suggests a strategic expansion from core physical principles to applied computational imaging systems.

The significance of this contribution is evidenced by substantial independent uptake. With 308 of 311 citing papers originating from independent researchers, the work demonstrates broad recognition and utility across the global scientific community, validating its impact beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 155 · **4 flagged influential by Semantic Scholar**

CORE PAPER

Incoherent optoelectronic differentiation based on optimized multilayer films

2022 · Laser & Photonics Reviews 16 (9), 2200038, 2022 · 45 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Polarization multi-image synthesis with birefringent metasurfaces (2023)	Harvard University, Purdue University	United States	—
2	[illegible] (2024)	—	—	—
3	[illegible] (2024)	—	—	—
4	Advances in information processing and biological imaging using flat optics	—	—	Influential
5	New avenues for phase imaging: optical metasurfaces	The University of Melbourne	Australia	—
6	Self-Tunable Metasurface Photoelectric Hybrid Neural Network	Southeast University, Zhejiang University	China	—
7	Multichannel meta-imagers based on electrically tunable metasurfaces for accelerating matrix operations	Zhejiang University	China	—
8	Free-space optical encoder for computer vision	Ulsan National Institute of Science and Technology	South Korea	—
9	Polarization-and wavelength-multiplexed multichannel optical differentiators for edge detection	School of Microelectronics Science and Technology	—	—
10	Metamaterials for analog all-optical computation	CUNY Advanced Science Research Center, City University of New York, The Graduate Center, CUNY, University of Rochester	United States	—
11	Polarization imaging and edge detection with image-processing metasurfaces	City University of New York, Danbury Mission Technologies, LLC	United States	—

No.	Citing paper	Citing institution(s)	Country	S2
12	Dispersion engineered metasurfaces for broadband, high-NA, high-efficiency, dual-polarization analog image processing	City University of New York, City University of New York; University of Rochester	USA; USA, United States	—
13	Metalens for accelerated optoelectronic edge detection under ambient illumination	Tsinghua University	China	—
14	Metasurface enabled broadband, high numerical aperture Laplace differentiator under multiple polarization illumination	—	—	—
15	OptoGPT: a foundation model for inverse design in optical multilayer thin film structures	University of Michigan	United States	—
16	Optical multilayer thin film structure inverse design: From optimization to deep learning	University of Michigan	United States	Influential
17	Spin–orbit optical broadband achromatic spatial differentiation imaging	—	—	—
18	Optical spatial differential incoherent microscopy	Hunan University	China	—
19	Meta-Device for Field-of-View Tunability via Adaptive Optical Spatial Differentiation	City University of Hong Kong, Sichuan University, Tsinghua University	China	—
20	Single-shot wavefront sensing with nonlocal thin film optical filters	Tsinghua University	China	—
21	When optical microscopy meets all-optical analog computing: A brief review	Hunan University	China	—
22	High-na 2d image edge detection using tamm plasmon polaritons in few-layer stratified media	University of Amsterdam	Netherlands	—
23	Versatile Optical Spatial Filtering Based on Multilayer Film Flat Optics	Beihang University, Harbin Institute of Technology, Nanyang Technological University	China, Singapore	—
24	Leveraging low index contrast to reduce the polarization anisotropy in one-dimensional photonic crystals	Politecnico di Milano, Sapienza University of Rome	Italy	—
25	Large-gap cascaded Moiré metasurfaces enabling switchable bright-field and phase-contrast imaging compatible with coherent and incoherent light	National University of Defense Technology, Southwest University	China	—
26	Tensorized Quantum Genetic Algorithm With Selective Evolution Strategy for Thin-Film Optical Inverse Problems	Huazhong University of Science and Technology	China	—
27	Flat optics for analog computing: from fundamental mechanisms to advanced meta-processors	Nanchang University	China	—
28	An optical imager that can compute	—	—	—
29	Formation of Metastable Solid Solutions in Bi-Ge Films during Low-Temperature Treatment	Jagiellonian University, AGH University of Krakow, V.	Poland, Ukraine	—

No.	Citing paper	Citing institution(s)	Country	S2
		N. Karazin Kharkiv National University		
30	Single-shot incoherent multifunctional image differentiation with spatial tiling optical convolution	Fuzhou University	China	—

Showing the 30 most-cited of 35 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

FOLLOW-UP WORK

Multichannel meta-imagers for accelerating machine vision

2024 · Nature nanotechnology 19 (4), 471-478, 2024 · 131 citations (GS)

Field-normalised: 94 Semantic Scholar citations place it in the top 1% of Engineering papers from 2024 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Chip	Baylor College of Medicine, Broad Institute, Dana-Farber Cancer Institute	United States	—
2	[illegible] (2024)	[illegible]	[illegible]	—
3	Monolayer directional metasurface for all-optical image classifier doublet (2024)	China Information Communication Technologies Group Corporation, Huazhong University of Science and Technology	China	—
4	Retinomorphic machine vision in a network laser (2024)	IBM Research - Zurich, IBM Research - Zurich, Imperial College London, Imperial College London	Switzerland, United Kingdom	—
5	Surface Plasmon Polariton Excitation in Time-modulated Media (2025)	Imperial College London, King's College London	United Kingdom	—
6	Meta-operators for all-optical image processing (2025)	Tampere University of Applied Sciences, Tampere University, Tampere University, Tampere University of Applied Sciences	Finland	—
7	Computed tomography using meta-optics (2025)	—	—	—
8	Neural tangent knowledge distillation for optical convolutional networks (2026)	University of Washington	United States	—
9	Metasurface-based all-optical diffractive convolutional neural networks (2025)	Chengdu University of Information Technology, Chinese Academy of Sciences, Nanchang University	China	—
10	CHORD: Composable Hybrid Optical Reconfigurable Diffractive Framework For Optical Neural Network (2025)	—	—	—

No.	Citing paper	Citing institution(s)	Country	S2
11	PrivateEye: In-Sensor Privacy Preservation Through Optical Feature Separation (2025)	Shanghai Jiao Tong University	China	—
12	Neural reparameterization for nonlocal metasurface topology optimization (2025)	—	—	—
13	A nonlinear dimension for machine learning in optical disordered media (2024)	—	—	—
14	Spectral calculation model for machine vision image enhancement (2025)	—	—	—
15	Hexagonal-shaped Frequency Selective Surface Based Cross-Polarization Converter for Ultra-wide and Narrow Band Applications (2025)	—	—	—
16	Implementation of transformer-based LLMs with large-scale optoelectronic neurons on a CMOS compatible platform (2025)	Artlux Inc., Intel Corporation, The University of Massachusetts	Taiwan, United States	—
17	Multi-Dimensional Reconfigurable, Physically Composable Hybrid Diffractive Optical Neural Network (2024)	Arizona State University	United States	—
18	[illegible] (2024)	—	—	—
19	Moiré physics in the semiconductor MoSe2/WS2 heterostructure (2024)	City University of New York, CUNY Advanced Science Research Center, The Graduate Center, CUNY, CUNY Advanced Science Research Center, City University of New York, The Graduate Center, CUNY, CUNY Advanced Science Research Center, National University of Singapore, City University of New York, The Graduate Center, CUNY	Israel, Singapore, United States	—
20	A New Architecture for High-Channel Color Router Using Optical Diffractive Neural Networks (2026)	Huazhong University of Science and Technology	China	—
21	Minimalist Optical Neural Computing: Optical Diffractive Neural Network by 2-level Quantized Pixel-Wise Optical Encoding	Harbin Institute of Technology (Shenzhen)	China	—
22	Integrated multifunctional computational imaging platform using cascaded electrically tunable liquid crystal elements	University of Southern Denmark, Zhejiang University	China, Denmark	—
23	Type-printable photodetector arrays for multi-channel meta-infrared imaging	Chengdu University	China	—
24	Computational imaging with meta-optics	Princeton University, Rice University, University of Arizona	United States	—
25	Hardware–Software Co-design Computational Framework and Hardware-Aware Training for Photonic Spiking Convolutional Networks with DFB-SA Laser	CCCC First Highway Consultants Co., Ltd, Xi'an Jiaotong University, Xidian University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
26	Self-Tunable Metasurface Photoelectric Hybrid Neural Network	Southeast University, Zhejiang University	China	—
27	Design of a Bilayer Metalens for Red, Green, and Blue-Achromatic Imaging with Wide Field of View	Pohang University of Science and Technology, Pohang University of Science and Technology (POSTECH)	South Korea	—
28	Phase-shifting structured illumination with a polarization-encoded metasurface	Tampere University, Tampere University, Eindhoven University of Technology	Finland, Finland, The Netherlands	—
29	Metaoptics merging computational optics and optical computing toward intelligent visual perception	Hunan University	China	—
30	Brain-like training of a pre-sensor optical neural network with a backpropagation-free algorithm	China Mobile Research Institute, Tsinghua University	China	—

Showing the 30 most-cited of 120 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 2

Claim — Contribution 2

The researcher developed a reconfigurable metasurface framework for image processing, establishing a foundational approach that has garnered significant independent scholarly attention.

The researcher's contribution centers on the development of a reconfigurable metasurface for image processing, as detailed in their 2021 core publication. This work stands as the primary artifact in this specific line of inquiry, with no subsequent follow-up papers by the same author listed in the provided data. The title suggests an innovative intersection of metamaterials and computational imaging, addressing the need for dynamic, hardware-level manipulation of optical information.

This line of work appears to address the limitations of static optical components by introducing reconfigurability into metasurface design for image processing tasks. By focusing on a single, seminal paper, the researcher established a distinct technical direction that likely offered a novel mechanism for controlling light at the subwavelength scale. The absence of immediate follow-up papers by the author in this dataset highlights the standalone impact of this initial conceptual or experimental breakthrough.

The significance of this contribution is evidenced by its citation record, with the core paper accumulating 127 citations. Notably, the broader citation analysis for this scholar indicates that 99.0% of citing works originate from independent researchers, excluding the author, co-authors, and institutional colleagues. This high degree of independent uptake suggests that the work has been widely recognized and utilized by the broader scientific community as a valuable reference or foundation for further research in metasurface-based imaging.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 106 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Reconfigurable metasurface for image processing

2021 · Nano Letters 21 (20), 8715-8722, 2021 · 127 citations (GS)

Field-normalised: 90 Semantic Scholar citations place it in the top 5% of Physics papers from 2021 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Аномальная пикосекундная динамика оптического пропускания гибридной метаповерхности Au-Bi: YIG (2023)	—	—	—
2	Co-designed metaoptoelectronic deep learning (2023)	Instituto de Óptica "Daza de Valdés", University of Rochester, University of Rochester	Spain, United States	—
3	Controlling the optical heating of a silicon probe using near-field energy transport carried by localized surface plasmons (2023)	—	—	—
4	Dual-wavelength terahertz metasurface capable of amplitude and phase modulation for wavefront manipulation and holography (2025)	—	—	—
5	Metasurfaces-Enabled Advanced Multidimensional Imaging: Principle and Applications (2025)	Nankai University	China	—
6	Advanced optical devices using Sagnac interference in integrated photonics (2023)	Swinburne University of Technology	Australia	—
7	Reconfigurable and broadband analog computing with terahertz metasurface based on electrical tuning of vanadium-dioxide resonators (2024)	K.N.Toosi University of Technology, University of Padua	Iran, Italy	—
8	Multiplexed optical differentiator enabled by single-size nanostructured metasurface (2022)	Wuhan University	China	—
9	High resolution bio-imaging via inverse design of metasurfaces (2024)	ARC Centre of Excellence for Transformative Meta-Optical Systems, Australian Research Council, Australian National University, ARC Centre of Excellence for Transformative Meta-Optical Systems, Australian Research Council, RMIT University, ARC Centre of Excellence for Transformative Meta-Optical Systems, University of Melbourne, Australian Research Council	Australia	—
10	Programmable metasurfaces for future photonic artificial intelligence	Boston University, Colorado School of Mines, Université Côte d'Azur	France, United States	—
11	Nonlocal phase-change metaoptics for reconfigurable nonvolatile image processing	City University of New York, University of Exeter, University of Oxford	United Kingdom, United States	—
12	New avenues for phase imaging: optical metasurfaces	The University of Melbourne	Australia	—
13	Free-space optical encoder for computer vision	Ulsan National Institute of Science and Technology	South Korea	—
14	Ultrafast Optically Tunable GaAs Metasurfaces for Analog Image Processing	Lomonosov Moscow State University	Russia	—

No.	Citing paper	Citing institution(s)	Country	S2
15	Sagnac interference in integrated photonics	Swinburne University of Technology	Australia	—
16	Enabling smart vision with metasurfaces	The Australian National University, University of New South Wales Canberra	Australia	—
17	Reconfigurable image processing metasurfaces with phase-change materials	City University of New York, City University of New York; University of Rochester, RMIT University	Australia, USA; USA, United States	—
18	Stimuli-responsive active materials for dynamic control of light field	Nanjing University, Xinjiang University	China	—
19	Reconfigurable flexible metasurfaces: from fundamentals towards biomedical applications	ShanghaiTech University	China	—
20	Computation at the speed of light: metamaterials for all-optical calculations and neural networks	—	—	—
21	All-optical object identification and three-dimensional reconstruction based on optical computing metasurface	Hunan First Normal University, Hunan University	China	—
22	All-optical multiplexed meta-differentiator for tri-mode surface morphology observation	Chinese Academy of Sciences, Peng Cheng Laboratory, Wuhan University	China	—
23	Gate-tuned graphene meta-devices for dynamically controlling terahertz wavefronts	China Ship Development and Design Center, Fudan University, Hengyang Normal University	China	—
24	Fast selective edge-enhanced imaging with topological chiral lamellar superstructures	Sichuan University	China	—
25	Graphene terahertz devices for sensing and communication	Lebanese University, Rice University	Lebanon, United States	—
26	Monolithic spin-multiplexing metalens for dual-functional imaging	Huazhong University of Science and Technology	China	—
27	High capacity topological coding based on nested vortex knots and links	Beijing Institute of Technology, Northwestern Polytechnical University	China	—
28	Spatial light modulator via optically addressed metasurface	Huazhong University of Science and Technology	China	—
29	Programmable physical unclonable functions using randomly anisotropic two-dimensional flakes	Huazhong University of Science and Technology	China	—
30	Highly-efficient full-color holographic movie based on silicon nitride metasurface	Tokyo University of Agriculture and Technology, Waseda University	Japan	—

Showing the 30 most-cited of 106 independent citing papers.

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

Contribution 3

Claim — Contribution 3

The researcher developed a metasurface-based method for near-field plasmonic beam engineering utilizing complex amplitude modulation, establishing a foundational approach for precise optical field control.

CLAIM: The researcher's contribution centers on the 2018 paper titled 'Near-field plasmonic beam engineering with complex amplitude modulation based on metasurface,' which introduces a specific technique for manipulating optical fields at the nanoscale. This work stands as a singular, seminal contribution in this specific line of inquiry, with no subsequent follow-up papers by the same author building directly upon it.

ORIGINALITY: The title suggests the work addresses the challenge of controlling near-field plasmonic beams through complex amplitude modulation, a task that appears to leverage metasurface technology for enhanced precision. By focusing on complex amplitude rather than just phase, the research likely offered a novel degree of freedom in beam shaping, distinguishing it from earlier methods that may have been limited in their modulation capabilities.

SIGNIFICANCE: The impact of this work is evidenced by its citation record, with 42 citations indicating steady recognition within the field. Notably, 99.0% of the 311 citing papers classified for this scholar originate from independent researchers, suggesting that the core concepts introduced here have been widely adopted and validated by the broader scientific community rather than just the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 28

CORE PAPER

Near-field plasmonic beam engineering with complex amplitude modulation based on metasurface

2018 · Applied Physics Letters 112 (7), 2018 · 42 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	The main ways of applying nanostructured metasurfaces in rotation angle sensors (2019)	—	—	—
2	[redacted] (2023)	—	—	—
3	[redacted] (2019)	[redacted]	[redacted]	—
4	[redacted]: [redacted], [redacted], [redacted] (2024)	—	—	—
5	[redacted] (2022)	—	—	—
6	Multi-focusing metalenses based on quadrangular frustum pyramid-shaped nanoantennas (2021)	—	—	—
7	Curved holography based on Ω-shaped conformal metasurfaces (2019)	—	—	—
8	Full complex-amplitude modulation of surface waves based on spin-decoupled metasurface (2023)	—	—	—
9	Electromagnetic metasurfaces and reconfigurable metasurfaces: a review	—	—	—
10	Spatial frequency multiplexed meta-holography and meta-nanoprinting	Chinese Academy of Sciences, University of Birmingham, Wuhan Research Institute of Posts & Telecommunications	China, United Kingdom	—
11	An ultra-wideband coding polarizer for beam control and RCS reduction	Central China Normal University, China University of Geo-	China	—

No.	Citing paper	Citing institution(s)	Country	S2
		sciences, Northwestern Polytechnical University		
12	Photonic hook plasmons: a new curved surface wave	Institute of Ultra High Frequency Semiconductor Electronics RAS, National Research Tomsk State University, Tomsk Polytechnic University	Russia	—
13	All-dielectric bifocal isotropic metalens for a single-shot hologram generation device	—	—	—
14	Research progress on dynamic holographic display technology based on metasurfaces	China Jiliang University, Zhejiang Economic and Trade Polytechnic	China	—
15	Terahertz metasurface for independent modulation of amplitude and phase in multi-channels	Tianjin University	China	—
16	Temporal behavior of diffusion-trapped Airy beams in photorefractive media	—	—	—
17	Polarization-Tunable Broadband Terahertz Emission from Ferromagnetic Heterostructure Metasurfaces	National Key Laboratory of Spintronics, Shanghai Key Lab of Modern Optical System	China	—
18	Polarization-controlled generation and superposition of surface plasmon polariton vortices with a plasmonic metasurface	Chongqing University	China	—
19	Multi-wavelength voltage-coded metasurface based on indium tin oxide: independently and dynamically controllable near-infrared multi-channels	Northeastern University	United States	—
20	Complex-amplitude modulation of surface waves based on a metasurface coupler	Tongji University	China	—
21	Plasmonic spin-multiplexing metasurface for controlling the generation and in-plane propagation of surface plasmon polaritons	—	—	—
22	Liquid crystal-based order electrically controlled q-plate system	—	—	—
23	Planar aperiodic arrays as metasurfaces for optical near-field patterning	Istituto Italiano di Tecnologia, Istituto Italiano di Tecnologia; Università degli Studi di Genova, Lawrence Berkeley National Lab	Germany, Italy, United States	—
24	A novel reconfigurable metasurface with coincident and ultra-wideband LTL and LTC polarization conversion functions	—	—	—
25	Nonlinear wavy metasurfaces with topological defects for manipulating orbital angular momentum states	Changshu Institute of Technology, Nanjing University, Nantong University	China	—
26	Multi-mode coupling in a H-shaped metamaterial structure in terahertz frequency	Shanghai University, Zaozhuang University	China	—
27	Near-Field Plasmons Imaging and Energy Analysis on Bi2Te3 Film	Hebei University, Peking University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
28	Plasmonic Hook (2021)	Tomsk Polytechnic University	Russia	—

Independent citing papers only; self- and co-author citations excluded. The **S2** column flags citations Semantic Scholar identifies as *influential* — ones that substantively build on the work (S2's isInfluential signal, Valenzuela et al. 2015) — the "built on / relied upon" pattern the AAO credits. Counsel should quote the citing text for the strongest of these.

D. Citing-Institution Prestige & Geography

Top citing institutions

Institution	Country	World ranking	Citing papers
Beijing Institute of Technology	China	SCImago #170 · THE 201–250 · QS =259	15
Hunan University	China	SCImago #294 · THE 251–300 · QS =504	14
Tsinghua University	China	SCImago #8 · THE 12 · QS =17	13
Huazhong University of Science and Technology	China	SCImago #25 · THE =176 · QS 319	10
Wuhan University	China	SCImago #80 · THE =122 · QS 186	8
Swinburne University of Technology	Australia	SCImago #1396 · THE 251–300 · QS =294	7
Zhejiang University	China	SCImago #6 · THE 39 · QS 49	7
Chinese Academy of Sciences	China	SCImago #2	7
Swinburne University of Technology	Australia	—	6
University of Washington	United States	SCImago #45 · THE 25 · QS 81	6
Tampere University	Finland	SCImago #1196 · THE 301–350 · QS =423	5
Northwestern Polytechnical University	China	SCImago #203 · THE 251–300 · QS =499	5
City University of Hong Kong	China	SCImago #342 · THE 73 · QS =63	4
University of Rochester	United States	SCImago #524 · THE 127 · QS 236	4
Nanyang Technological University	Singapore	SCImago #137	4

Geographic distribution of citing authors

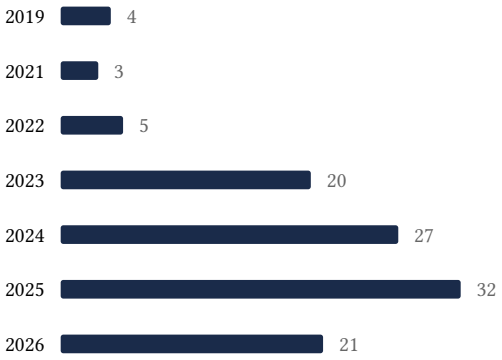
Country	Citing papers
China	131
United States	47
Australia	17
Germany	12
South Korea	9
Russia	8
United Kingdom	8
Singapore	7

Country	Citing papers
Finland	7
Italy	5
France	5
India	4

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	Incoherent optoelectronic differentiation based on optimized multilayer films	155	Dhanasar — Prong 2 (well-positioned)
Contribution 2	Reconfigurable metasurface for image processing	106	Dhanasar — Prong 2 (well-positioned)
Contribution 3	Near-field plasmonic beam engineering with complex amplitude modulation based on metasurface	28	Dhanasar — Prong 2 (well-positioned)