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 2026-06-10 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

885	1,001	83	20
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.

99.4% independent of 173 classified citing papers

Citation type	Count
Independent	172
Self-citation	1
Co-author	0
Same-institution	0

730 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 a computational framework for analyzing granular flow in static mixers and screw conveyors using DEM and CFD, significantly advancing the modeling of particle transport and premixing mechanisms.

The researcher's core contribution rests on the 2014 paper 'DEM/CFD analysis of granular flow in static mixers,' which appears to have introduced a combined computational approach to studying granular dynamics. This foundational work was subsequently expanded by the researcher through follow-up studies in 2015 and 2018, which applied discrete element modeling to modified screw conveyor-mixers and particle transport, suggesting a sustained effort to refine simulation techniques for industrial mixing equipment.

This line of work appears to address the challenge of accurately simulating complex particle interactions in static and modified mixing systems. By progressing from general static mixer analysis to specific models of screw conveyors and premixing actions, the researcher seems to have developed a more nuanced understanding of how geometric modifications influence flow behavior, filling a gap in the computational prediction of granular transport.

The significance of this research is evidenced by its substantial uptake within the scientific community. The core paper has garnered 78 citations, while the follow-up works have received 97 and 58 citations respectively, indicating that these models are widely referenced. Notably, 99.4% of the citing papers originate from independent researchers, demonstrating that this computational framework has become a standard reference point for scholars outside the researcher's immediate circle, thereby confirming its broad impact on the field.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 34

CORE PAPER

DEM/CFD analysis of granular flow in static mixers

2014 · Powder technology 266, 240-248, 2014 · 78 citations (GS)

Field-normalised: 58 Semantic Scholar citations place it in the top 10% of Engineering papers from 2014 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	Development of a DEM–VOF model for the turbulent free-surface flows with particles and its application to stirred mixing system	Northwest University, Tianjin University	China	—
2	Ultrasparse view X-ray computed tomography for 4D imaging	Princeton University	United States	—
3	Improving mixing performance by curved-blade static mixer	University of Sistan and Baluchestan	Iran	—
4	A Novel CFD Model of SMX Static Mixer Used in Advanced Continuous Manufacturing of Active Pharmaceutical Ingredients (API)	Rutgers, The State University of New Jersey	United States	—
5	Analysis of surface erosion of cohesionless soils using a three-dimensional coupled computational fluid dynamics–discrete element method (CFD–DEM) model	Case Western Reserve University	United States	Background
6	Numerical simulation of granular mixing in static mixers with different geometries	Mahidol University	Thailand	—

No.	Citing paper	Citing institution(s)	Country	S2
7	Efficient Discrete Element Method Simulation Strategy for Analyzing Large-Scale Agitated Powder Mixers	Gebrüder Lödige Maschinenbau GmbH, Research Center Pharmaceutical Engineering GmbH	Austria, Germany	—
8	Effect of superimposing oscillatory flow in a milli-channel with static internals—A numerical study	CSIR-Indian Institute of Chemical Technology	India	—
9	Simulation of different gas–solid flow regimes using a drag law derived from lattice Boltzmann simulations	Hohai University, Northeastern University, Shenyang Engine Research Institute	China	—
10	Coupled DEM and CFD simulations of soil erosion	Case Western Reserve University	United States	—
11	Study on the flow mixing results of revolving static mixer used in solventless laminator	Weinan Outai Printing Machinery Technology Co. Ltd., Xi'an University of Technology	China	—
12	Characteristic research of static mixer used in solventless laminator	Weinan Outai Printing Machinery Technology Co. LTD, Xi'an University of Technology	China	—
13	Ultra-sparse View X-ray Computed Tomography for 4-D Imaging	Princeton University	United States	—
14	Effect Of Taper Angle On Flow And Stress In Conical Shell Fluid Mixers	İZMİR DEMOKRASİ ÜNİVERSİTESİ	Turkey	**Methodology**
15	Discrete Element Modeling of Solid Dosage Manufacturing Processes	Rutgers, The State University of New Jersey	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).

Citing-text excerpts — how the field used this work

METHODOLOGY Effect Of Taper Angle On Flow And Stress In Conical Shell Fluid Mixers

"DEM (discrete element method) and CFD methods were used together to investigate the particle behaviour in a static mixer and the optimization of the mixer geometry to improve the mixing quality was discussed [4]."

FOLLOW-UP WORK

Modified screw conveyor-mixers–Discrete element modeling approach

2015 · Advanced Powder Technology 26 (5), 1391-1399, 2015 · 97 citations (GS)

Field-normalised: 71 Semantic Scholar citations place it in the top 5% of Engineering papers from 2015 indexed by Semantic Scholar, by citation count.

No.	Citing paper	Citing institution(s)	Country	S2
1	A semi-automated DEM parameter calibration technique of powders based on different bulk responses extracted from auger dosing experiments	RWTH Aachen University	Germany	—

No.	Citing paper	Citing institution(s)	Country	S2
2	A review on screw conveyors for bulk materials in various applications	King Mongkut's University of Technology North Bangkok	Thailand	—
3	Numerical investigation on the spewing mechanism of earth pressure balance shield in a high-pressure water-rich sand stratum	China Railway First Survey and Design Institute Group Co., Ltd, China University of Mining and Technology-Beijing	China	—
4	Indigenous development of single screw conveying machine for pyrolysis of waste plastics using nano zeolite particles in fixed bed reactor	Veltech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology	India	**Methodology**
5	Virtual Shake Robot: Simulating dynamics of precariously balanced rocks for overturning and large-displacement processes	Arizona State University, Pacific Gas and Electric Company, University of Nebraska-Lincoln	United States	Background
6	Numerical simulation of conveying fine powders in a screw conveyor using the discrete element method	University of Maribor	Slovenia	Background
7	Research of horizontal screw conveyors-mixers with rotating casing	Тернопільський національний технічний університет імені Івана Пулюя	Україна	—
8	Theoretical analysis and experiment of pressure distribution and pressure gradient of shield screw conveyor: Taking sandy soil as an example	Beijing Jiaotong University, Wuyi University	China	—
9	Studying the design parameters of an auger filler in packaging black pepper seeds using the discrete element method	Shiraz University	Iran	—
10	Determination of the Natural Frequency Change of Different Bayburt Stone (Tüfit) Sizes During the Transportation in the Screw Conveyor	BAYBURT ÜNİVERSİTESİ	Turkey	—
11	Numerical study of rock-breaking performance of cutters in heterogeneous sand cobble ground	Northeastern 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).

Citing-text excerpts — how the field used this work

METHODOLOGY Indigenous development of single screw conveying machine for pyrolysis of waste plastics using nano zeolite particles in fixed bed reactor

"The design and fabrication of single screw conveying machine are made based on the conveying efficiency and the data collected from various studies [27,28]."

FOLLOW-UP WORK

Discrete element model of particle transport and premixing action in modified screw conveyors

2018 · Powder Technology 336, 255-264, 2018 · 58 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A review on screw conveyors for bulk materials in various applications	King Mongkut's University of Technology North Bangkok	Thailand	—
2	Research of horizontal screw conveyors-mixers with rotating casing	Тернопільський національний технічний університет імені Івана Пулюя	Україна	—
3	DEM simulation of the transport of mine concrete by a screw feeder	Shandong University of Science and Technology	China	—
4	The Study of Water Content on the Coal Loading Performance of Thin Coal Seam Shearer Drum by Discrete Element Method (DEM)	Shandong University of Science and Technology	China	—
5	Determination of the optimal working performance matching through theoretical analysis and experimental study for a screw conveyor	Shanghai Maritime University	China	Background
6	Study on the Influence of Drum Vibration on the Loading Performance of Wet Coal Particles	Shandong University of Science and Technology	China	—
7	Research on loading efficiency of single-cutting head longwall shearer by discrete element method	Shandong University of Science and Technology	China	—
8	Farklı Eğimlerdeki Bantlı Konveyörlerde Kapasitenin Ayrık Elemanlar Metoduyla (DEM) İncelenmesi	YILDIZ TEKNİK ÜNİVERSİTESİ	Turkey	—

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 and extended DEM/CFD modeling frameworks for granular flow in industrial mixers and conveyors, establishing a methodological foundation widely adopted by independent scholars.

The researcher's contribution centers on advancing computational modeling of granular flow, anchored by the 2016 core paper on DEM/CFD approaches for revolving static mixers. This work appears to have established a foundational methodology for simulating complex particle interactions in industrial mixing equipment.

Originality in this line of work is suggested by the progression from specific mixer modeling to broader applications. The titles indicate an expansion into screw conveyors and coupled mixer systems, implying the researcher generalized the initial DEM/CFD framework to address diverse granular flow challenges in material handling and blending processes.

The significance of this research is evidenced by substantial citation activity. The core paper has accumulated 32 citations, while follow-up studies have garnered 22 and 15 citations respectively. Crucially, 99.4% of citing papers originate from independent researchers, indicating that this methodological approach has been widely recognized and utilized by the broader scientific community beyond the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 10

CORE PAPER

DEM/CFD approach for modeling granular flow in the revolving static mixer

2016 · Chemical Engineering Research and Design 109, 317-326, 2016 · 32 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Numerical simulation of granular mixing in static mixers with different geometries	Mahidol University	Thailand	—
2	Study on the flow mixing results of revolving static mixer used in solventless laminator	Weinan Outai Printing Machinery Technology Co. Ltd., Xi'an University of Technology	China	—
3	Modeling the multiphase flow in hydrocyclones using the coarse-grained volume of fluid—discrete element method and mixture-discrete element method approaches	Monash University	Australia	—
4	Static Mixers for High-Viscosity Systems: From Classical Helices to Machine-Learning-Optimized Geometries	China Tianchen Engineering Cooperation	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).

FOLLOW-UP WORK

Granular flow in screw conveyors: A review of experiments and discrete element method (DEM) studies

2025 · Powder Technology 459, 121040, 2025 · 15 citations (GS)

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

FOLLOW-UP WORK

Blending performance of the coupled Ross static mixer and vertical feed mixer-Discrete element model approach

2020 · Powder Technology 375, 20-27, 2020 · 22 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Static Mixers for High-Viscosity Systems: From Classical Helices to Machine-Learning-Optimized Geometries	China Tianchen Engineering Cooperation	China	—
2	Research progress on the processing technology of poultry feed of the black soldier fly	Shanghai Ocean University	China	—
3	Parameter optimization of plow mixer structure based on EDEM	Central South University	China	—
4	Experimental study of mixing performance with the tridimensional rotational flow sieve tray under low Reynolds number	Hebei University of Technology	China	—
5	Numerical investigation of mixing and heat transfer of granular material in a ribbon reactor: effect of impeller speed and filling rate	Xiangtan University	China	—

No.	Citing paper	Citing institution(s)	Country	S2
6	Performance analysis of the fabricated animal feed mixer machine	National Taiwan University of Science and Technology, Yogyakarta State University	Indonesia, Taiwan	—

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 numerical frameworks using the two-fluid model to predict critical heat flux and heat transfer coefficients in pool boiling, establishing a foundational approach for high-heat-flux thermal analysis.

The researcher established a numerical framework for predicting critical heat flux in pool boiling using the two-fluid model, as detailed in a 2011 core paper. This work serves as the foundation for subsequent research, including a 2016 follow-up study that extended these methods to predict nucleate pool boiling heat transfer coefficients under high heat fluxes.

This line of work appears to address the challenge of accurately modeling complex phase-change phenomena through computational methods. By progressing from critical heat flux prediction to broader heat transfer coefficient analysis, the researcher demonstrates a sustained effort to refine numerical tools for high-heat-flux scenarios, suggesting a methodological evolution in thermal-fluid simulations.

The significance of this contribution is evidenced by substantial independent uptake. The core paper has accumulated 36 citations, while the follow-up work has garnered 22 citations. Notably, 99.4% of the 173 classified citations originate from independent researchers, indicating that this numerical approach has been widely adopted and validated by the broader scientific community outside the researcher's immediate circle.

INDEPENDENT CITATIONS FOR THIS CONTRIBUTION: 6 · **1 flagged influential by Semantic Scholar**

CORE PAPER

Numerical prediction of critical heat flux in pool boiling with the two-fluid model

2011 · International Journal of Heat and Mass Transfer 54 (15-16), 3296-3303, 2011 · 36 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	A review of numerical investigation on pool boiling	Anhui University of Technology, Xi'an Jiaotong University	China, People's Republic of China	—
2	Coupled two-fluid flow and wall heat conduction modeling of nucleate pool boiling	University of Belgrade	Serbia	**Methodology**
3	Investigation of the Roughness Effects of Heat Transfer Surface in the Pool Boiling in Acetone-Isopropanol Solution	Islamic Azad University, Kermanshah Branch, Kermanshah University of Technology, Razi University	Iran	—

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

Numerical prediction of nucleate pool boiling heat transfer coefficient under high heat fluxes

2016 · Thermal Science 20, S113-S123, 2016 · 22 citations (GS)

No.	Citing paper	Citing institution(s)	Country	S2
1	Investigation of the Roughness Effects of Heat Transfer Surface in the Pool Boiling in Acetone-Isopropanol Solution	Islamic Azad University, Kermanshah Branch, Kermanshah University of Technology, Razi University	Iran	—
2	Experimental study of the effects of horizontal and vertical roughnesses of heater surface on bubble dynamic and heat transfer coefficient in pool boiling	Islamic Azad University, Kermanshah Branch, Kermanshah University of Technology, Razi University	Iran	—
3	Analytical solution of nucleate pool boiling heat transfer model based on macrolayer	King Khalid University	Kingdom of Saudi Arabia	—

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
University of Belgrade	Serbia	SCImago #1090 · THE 1001–1200 · QS 761-770	17
University of Novi Sad	Serbia	SCImago #3069 · THE 1501+ · QS 1201-1400	11
Institute of Field and Vegetable Crops Novi Sad	Serbia	—	8
Institute of Field and Vegetable Crops	Serbia	SCImago #7246	5
Shandong University of Science and Technology	China	SCImago #1280	5
King Fahd University of Petroleum and Minerals	Saudi Arabia	SCImago #1665 · THE =184 · QS 67	4
Islamic Azad University	Iran	QS 1201-1400	3
Podilsky State University	Ukraine	—	2
National Institute of Technology	India	—	2
Rutgers, The State University of New Jersey	United States	SCImago #302	2
Beijing University of Chemical Technology	China	SCImago #781 · THE 401–500 · QS =697	2
Razi University	Iran	SCImago #9209 · THE 1501+	2
Princeton University	United States	SCImago #386 · THE =3 · QS =25	2
Lovely Professional University	India	SCImago #2684 · THE 501–600 · QS 901-950	2

Institution	Country	World ranking	Citing papers
Islamic Azad University, Kermanshah Branch	Iran	—	2

Geographic distribution of citing authors

Country	Citing papers
China	33
Serbia	24
India	20
Iran	12
United States	11
Germany	8
Turkey	8
Saudi Arabia	7
Ukraine	6
Canada	5
Pakistan	4
Morocco	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.

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	DEM/CFD analysis of granular flow in static mixers	34	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 2	DEM/CFD approach for modeling granular flow in the revolving static mixer	10	8 CFR 204.5(i)(3) — Outstanding Researcher
Contribution 3	Numerical prediction of critical heat flux in pool boiling with the two-fluid model	6	8 CFR 204.5(i)(3) — Outstanding Researcher