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Assignee(s): Michigan State University
Inventor(s): Marking, G.A.; Kanatzidis, M.G.; Liao, J.H.
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Title: Alkali metal quaternary chalcogenides and process for the preparation thereof
Assignee(s): Michigan State University

Inventor(s): Marking, G.A.; Kanatzidis, M.G.; Liao, J.H.

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Assignee(s): Michigan State University
Inventor(s): Marking, G.A.; Liao, J.H.; Kanatzidis, M.G.
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Assignee(s): Michigan State University; Northwestern University
Inventor(s): Kanatzidis, M.G.; Hogan, T.; Iordanidis, L.; Chung, D.Y.; Kannewurf, C.R.
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Title: Conductive isostructural compounds
Assignee(s): Michigan State University
Inventor(s): Kanatzidis, M.G.; Chung, Duck-Young; DeNardi, S.; Sportouch, S.
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- 7) 2008; US-7326851 (US 20040200519 A1, 2004)
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Assignee(s): BASF Aktiengesellschaft; Michigan State University
Inventor(s): Sterzel, H.J.; Kuehling, K.; Kanatzidis, M.G.; Chung, D.Y.
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Assignee(s): Michigan State University
Inventor(s): Kanatzidis, M.G.
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Title: Process for the removal of metals using an open framework chalcogenide
Assignee(s): Michigan State University
Inventor(s): Kanatzidis, M.G.; Manos, M.J.
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Assignee(s): Michigan State University
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Title: Thermoelectric compositions and process
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Inventor(s): Kanatzidis, M.G.; Androulakis, J.; Sootsman, J.R.
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Title: Thermoelectric figure of merit enhancement by modification of the electronic density of states
Assignee(s): Northwestern University; Ohio State University
Inventor(s): Androulakis, J.; Gao, Y.; Girard, S.N.; Heremans, J.; Jaworski, C.; Kanatzidis, M.G.
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Assignee(s): Northwestern University
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Assignee(s): Northwestern University
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Title: Mechanical strength and thermoelectric performance in metal chalcogenide MQ (M=Ge, Sn, Pb and Q=S, Se, Te) based compositions
Assignee(s): Northwestern University
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Inventor(s): Kanatzidis, M.G.; Chung, I.; Lee, B.; Chang, R.P.H.
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Title: Thermoelectrics compositions comprising nanoscale inclusions in a chalcogenide matrix
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Zhang, Q.; Girard, S.N.; Biswas, K.
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Title: Method of collecting and processing electron diffraction data
Assignee(s): Columbia University, New York
Inventor(s): Billinge, S.; Farrow, C.; Gorelik, T.E.; Kanatzidis, M.G.; Schmidt, M.U.
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Title: Column material for the capture of heavy metal and precious metal ions
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Sarma, D.; Manos, E.
- 26) 2015; US-8940578 (US 20130196469-A1, 2013)
Title: Low-temperature fabrication of metal oxide thin films and nanomaterial-derived metal composite thin films
Assignee(s): Northwestern University, Polyera Corporation
Inventor(s): Facchetti, A.; Marks, T.J.; Kanatzidis, M.G.; Kim, M.-G.; Sheets, W.C.; Yan, H.; Xia, Y.
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Title: Low-temperature fabrication of metal oxide thin films and nanomaterial-derived metal composite thin films
Assignee(s): Northwestern University, Polyera Corporation
Inventor(s): Facchetti, A.; Marks, T.J.; Kanatzidis, M.G.; Kim, M.-G.; Sheets, W.C.; Yan, H.; Xia, Y.
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Title: Porous polymer networks and ion-exchange media and metal-polymer composites made therefrom
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Katsoulidis, A.
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Title: Chalcogenide compounds for the remediation of nuclear and heavy metal wastes
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Mertz, J. L.; Manos, E.
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Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Hao, F.
- 31) 2016; US-9181475 (US 20130320836-A1, 2013)
Title: Photoluminescent compounds
Assignees(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Chung, I.; Stoumpos, K.
- 32) 2016; US-9227186 (US 20140097141-A1, 2014)

Title: Synthesis of layered metal sulfide ion-exchangers

Assignee(s): Northwestern University

Inventor(s): Kanatzidis, M.G.; Fard, Z. H.

- 33) 2016; US-9412852 (US 20150206957-A1, 2015)
Title: Low-temperature fabrication of nanomaterial-derived metal composite thin films
Assignees(s): Northwestern University; Polyera Corporation
Inventor(s): Facchetti, A.; Marks, T.; Kanatzidis, M.G.; Kim, M.-G.; Sheets, W.C.; Yan, H.; Xia, Y.
- 34) 2016; US-9468923 (US 20150190799-A1, 2015)
Title: Porous polymer networks and ion-exchange media and metal-polymer composites made therefrom
Assignees(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Katsoulidis, A.
- 35) 2016; US-20160049568-A1
Title: Tin selenide single crystals for thermoelectric applications
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Zhao, L.-D.
- 36) 2016; US-20160102248-A1
Title: Photoluminescent compounds
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Chung, I.; Stoumpos, K.
- 37) 2016; US-20160211083-A1
Title: Solar cells with perovskite-based light sensitization layers
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Chang, R.P.H.; Stoumpos, K.; Lee, B.
- 38) 2017; US-9610538 (US 20150336050-A1, 2015)
Title: Polysulfide intercalated layered double hydroxides for metal capture applications
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Ma, S.
- 39) 2018; US 20180318791-A1
Title: Composite materials containing organic polymer-encapsulated metal organic frameworks
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, Sarma, D.; Manos, E.
- 40) 2018; US 20180301646-A1
Title: Phase-pure, two-dimensional, multilayered perovskites for optoelectronic applications
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, Cao, D.H.; Stoumpos, K.
- 41) 2018; US 20180164447-A1
Title: Chalco-phosphate-based hard radiation detectors
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, Wang, P.L.; Wessels, B.W.; Liu, Z.
- 42) 2019; US-20190235096-A1

Title: Inorganic ternary halide semiconductors for hard radiation detection

Assignee(s): Northwestern University

Inventor(s): Kanatzidis, M.G.; Wessels, B.W.; Liu, Z.; Lin, W;

- 43) 2019; US20190177878-A1
Title: Methods for the synthesis, purification and crystal growth of inorganic crystals for hard radiation detectors
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Lin, W.
- 44) 2019; US 20190055136-A1
Title: Amorphous and porous alkali metal chalcogenides for remediation applications
Assignee(s): Northwestern University
Inventor(s): Kanatzidis, M.G.; Fard, Z.H.; Islam, S.M.
- 45) Title: Lithium-Containing Chalcophosphates for Thermal Neutron Detection
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, DG Chica, HE Yihui, DY Chung
US Patent App. 18/142,220
- 46) Method for purifying a thallium compound using a carbon powder
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, W Lin
US Patent App. 18/139,605
- 47) Oxygen-and fluorine-doped cesium and rubidium lead perovskite compounds for hard radiation detection
Assignee(s): Northwestern University
Inventor(s): W Lin, DY Chung, MG Kanatzidis
US Patent App. 17/919,825
- 48) Inorganic ternary halide semiconductors for hard radiation detection
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, BW Wessels, Z Liu, W Lin
US Patent 11,531,124
- 49) Copper halide chalcogenide semiconductor compounds for photonic devices
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, W Lin
US Patent 11,508,865
- 50) Mercury chalciodides for room temperature radiation detection
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, HE Yihui
US Patent App. 17/721,634
- 51) High radiation detection performance from photoactive semiconductor single crystals
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, HE Yihui
US Patent App. 17/523,14

- 52) Conjugated polymers for the selective electroless recovery of gold and silver from solutions
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, S Ma
US Patent App. 17/439,309
- 53) Thick alkali metal halide perovskite films for low dose flat panel x-ray imagers
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, Y Xu
US Patent 11,249,203
- 54) Method for purifying an inorganic material using a tube having a bend between a first end and a second end of the tube
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, W Lin
US Patent App. 17/341,899
- 55) Organic-inorganic hybrid perovskite compounds
Assignee(s): Northwestern University
Inventor(s): KE Weijun, K Stoumpos, I Spanopoulos, MG Kanatzidis
US Patent App. 17/495,121
- 56) Organic-inorganic hybrid perovskite compounds
Assignee(s): Northwestern University
Inventor(s): KE Weijun, K Stoumpos, I Spanopoulos, MG Kanatzidis
US Patent 11,171,297
- 57) Metal organic resins with zirconium nodes
Assignee(s): Northwestern University
Inventor(s): MG Kanatzidis, D Sarma, E Manos
US Patent App. 17/315,833
- 58) Two-dimensional perovskites for stable and efficient photovoltaic cells
Assignee(s): Northwestern University
Inventor(s): L Mao, KE Weijun, K Stoumpos, MG Kanatzidis
US Patent App. 17/285,049
- 59) High radiation detection performance from photoactive semiconductor single crystals
Inventor(s): MG Kanatzidis, HE Yihui
US Patent 11,195,967
- 60) Composite, hierarchical electrocatalytic materials for water splitting
Inventor(s): MG Kanatzidis, S Ma
US Patent App. 17/289,04

STUDENTS AND ALUMNI TO DATE

- Approximately 98 graduate PhD students
- Approximately 125 postdocs
- Over 120s undergraduates