Emanuel Tutuc

List of Publications by Citations

141 papers	18,015 citations	49 h-index	134 g-index
150 ext. papers	20,395 ext. citations	8.2 avg, IF	6.42 L-index

#	Paper	IF	Citations
141	Large-area synthesis of high-quality and uniform graphene films on copper foils. *Science*, **2009**, 324, 1312-4	33.3	8900
140	The role of surface oxygen in the growth of large single-crystal graphene on copper. *Science*, **2013**, 342, 720-3	33.3	868
139	Realization of a high mobility dual-gated graphene field-effect transistor with Al2O3 dielectric. *Applied Physics Letters*, **2009**, 94, 062107	3.4	737
138	Evidence for moiré excitons in van der Waals heterostructures. *Nature*, **2019**, 567, 71-75	50.4	538
137	Field-effect transistors and intrinsic mobility in ultra-thin MoSe2 layers. *Applied Physics Letters*, **2012**, 101, 223104	3.4	414
136	Spectrally selective chiral silicon metasurfaces based on infrared Fano resonances. *Nature Communications*, **2014**, 5, 3892	17.4	313
135	van der Waals Heterostructures with High Accuracy Rotational Alignment. *Nano Letters*, **2016**, 16, 1989-95	11.5	300
134	Tunable moiré bands and strong correlations in small-twist-angle bilayer graphene. *Proceedings of the National Academy of Sciences of the United States of America*, **2017**, 114, 3364-3369	11.5	294
133	Counterflow measurements in strongly correlated GaAs hole bilayers: evidence for electron-hole pairing. *Physical Review Letters*, **2004**, 93, 036802	7.4	238
132	High-Mobility Holes in Dual-Gated WSe2 Field-Effect Transistors. *ACS Nano*, **2015**, 9, 10402-10	16.7	180
131	Hubbard Model Physics in Transition Metal Dichalcogenide Moiré Bands. *Physical Review Letters*, **2018**, 121, 026402	7.4	176
130	Bilayer PseudoSpin Field-Effect Transistor (BiSFET): A Proposed New Logic Device. *IEEE Electron Device Letters*, **2009**, 30, 158-160	4.4	161
129	Field effect transistors with current saturation and voltage gain in ultrathin ReS2. *ACS Nano*, **2015**, 9, 363-70	16.7	147
128	Topological Insulators in Twisted Transition Metal Dichalcogenide Homobilayers. *Physical Review Letters*, **2019**, 122, 086402	7.4	145
127	Coulomb drag of massless fermions in graphene. *Physical Review B*, **2011**, 83,	3.3	145
126	Structural and Electrical Properties of MoTe2 and MoSe2 Grown by Molecular Beam Epitaxy. *ACS Applied Materials & Interfaces*, **2016**, 8, 7396-402	9.5	144
125	Air Stable Doping and Intrinsic Mobility Enhancement in Monolayer Molybdenum Disulfide by Amorphous Titanium Suboxide Encapsulation. *Nano Letters*, **2015**, 15, 4329-36	11.5	138

124	Gate-tunable resonant tunneling in double bilayer graphene heterostructures. *Nano Letters*, **2015**, 15, 428-33	11.5	136
123	Resistance spikes at transitions between quantum hall ferromagnets. *Science*, **2000**, 290, 1546-9	33.3	133
122	Shubnikov-de Haas Oscillations of High-Mobility Holes in Monolayer and Bilayer WSe_{2}: Landau Level Degeneracy, Effective Mass, and Negative Compressibility. *Physical Review Letters*, **2016**, 116, 086601	7.4	118
121	Band offset and negative compressibility in graphene-MoS2 heterostructures. *Nano Letters*, **2014**, 14, 2039-45	11.5	117
120	Photonic-crystal exciton-polaritons in monolayer semiconductors. *Nature Communications*, **2018**, 9, 713	17.4	115
119	Topologically Protected Helical States in Minimally Twisted Bilayer Graphene. *Physical Review Letters*, **2018**, 121, 037702	7.4	113
118	Valley splitting of AlAs two-dimensional electrons in a perpendicular magnetic field. *Physical Review Letters*, **2002**, 89, 226805	7.4	112
117	Correlated Insulating States in Twisted Double Bilayer Graphene. *Physical Review Letters*, **2019**, 123, 197702	7.4	110
116	Band Alignment in WSe2-Graphene Heterostructures. *ACS Nano*, **2015**, 9, 4527-32	16.7	105
115	CMOS-compatible synthesis of large-area, high-mobility graphene by chemical vapor deposition of acetylene on cobalt thin films. *ACS Nano*, **2011**, 5, 7198-204	16.7	98
114	Bilayer graphene. Chemical potential and quantum Hall ferromagnetism in bilayer graphene. *Science*, **2014**, 345, 58-61	33.3	97
113	In-plane magnetic field-induced spin polarization and transition to insulating behavior in two-dimensional hole systems. *Physical Review Letters*, **2001**, 86, 2858-61	7.4	94
112	Two-dimensional electrons occupying multiple valleys in AlAs. *Physica Status Solidi (B): Basic Research*, **2006**, 243, 3629-3642	1.3	93
111	Dielectric thickness dependence of carrier mobility in graphene with HfO2 top dielectric. *Applied Physics Letters*, **2010**, 97, 123105	3.4	91
110	Scaling of Al2O3 dielectric for graphene field-effect transistors. *Applied Physics Letters*, **2012**, 100, 093112	3.4	89
109	Flat bands in twisted bilayer transition metal dichalcogenides. *Nature Physics*, **2020**, 16, 1093-1096	16.2	87
108	Spin polarization and g factor of a dilute GaAs two-dimensional electron system. *Physical Review Letters*, **2002**, 88, 036805	7.4	85
107	Spin susceptibility of two-dimensional electrons in narrow AlAs quantum wells. *Physical Review Letters*, **2004**, 92, 226401	7.4	81

106	Realization of a linear germanium nanowire p-n junction. *Nano Letters*, **2006**, 6, 2070-4	11.5	76
105	High performance wire-array silicon solar cells. *Progress in Photovoltaics: Research and Applications*, **2011**, 19, 307-312	6.8	72
104	Reconfigurable Complementary Monolayer MoTe Field-Effect Transistors for Integrated Circuits. *ACS Nano*, **2017**, 11, 4832-4839	16.7	71
103	Radial modulation doping in core-shell nanowires. *Nature Nanotechnology*, **2014**, 9, 116-20	28.7	69
102	Experimental Demonstration of Phase Modulation and Motion Sensing Using Graphene-Integrated Metasurfaces. *Nano Letters*, **2016**, 16, 3607-15	11.5	66
101	Direct measurement of the Fermi energy in graphene using a double-layer heterostructure. *Physical Review Letters*, **2012**, 108, 116404	7.4	65
100	Doping of germanium nanowires grown in presence of PH3. *Applied Physics Letters*, **2006**, 89, 263101	3.4	61
99	Atomistic simulation of the electronic states of adatoms in monolayer MoS2. *Applied Physics Letters* , **2014**, 104, 141603	3.4	58
98	Low-frequency acoustic phonon temperature distribution in electrically biased graphene. *Nano Letters*, **2011**, 11, 85-90	11.5	57
97	Interlayer exciton laser of extended spatial coherence in atomically thin heterostructures. *Nature*, **2019**, 576, 80-84	50.4	55
96	Lateral spin injection in germanium nanowires. *Nano Letters*, **2010**, 10, 3297-301	11.5	54
95	Strongly Enhanced Tunneling at Total Charge Neutrality in Double-Bilayer Graphene-WSe_{2} Heterostructures. *Physical Review Letters*, **2018**, 120, 177702	7.4	53
94	Density-Dependent Quantum Hall States and Zeeman Splitting in Monolayer and Bilayer WSe_{2}. *Physical Review Letters*, **2017**, 118, 247701	7.4	53
93	Enhanced electron mobility and high order fractional quantum Hall states in AlAs quantum wells. *Applied Physics Letters*, **2002**, 80, 1583-1585	3.4	51
92	Large effective mass and interaction-enhanced Zeeman splitting of K-valley electrons in MoSe2. *Physical Review B*, **2018**, 97,	3.3	49
91	Giant Frictional Drag in Double Bilayer Graphene Heterostructures. *Physical Review Letters*, **2016**, 117, 046803	7.4	47
90	Bilayer Graphene-Hexagonal Boron Nitride Heterostructure Negative Differential Resistance Interlayer Tunnel FET. *IEEE Electron Device Letters*, **2015**, 36, 405-407	4.4	46
89	Coulomb drag and magnetotransport in graphene double layers. *Solid State Communications*, **2012**, 152, 1283-1288	1.6	46

88	Spin-polarized to valley-polarized transition in graphene bilayers at □0 in high magnetic fields. *Physical Review Letters*, **2011**, 107, 016803	7.4	44
87	GaAs metal-oxide-semiconductor capacitors using atomic layer deposition of HfO2 gate dielectric: Fabrication and characterization. *Applied Physics Letters*, **2007**, 91, 193503	3.4	44
86	The marvels of moir□materials. *Nature Reviews Materials*, **2021**, 6, 201-206	73.3	41
85	Coherent Interlayer Tunneling and Negative Differential Resistance with High Current Density in Double Bilayer Graphene-WSe Heterostructures. *Nano Letters*, **2017**, 17, 3919-3925	11.5	40
84	Quantum Hall effect in Bernal stacked and twisted bilayer graphene grown on Cu by chemical vapor deposition. *Physical Review B*, **2012**, 85,	3.3	40
83	High-Performance Ge nMOSFETs With $hbox{n}^{+}hbox{-} hbox{p}$ Junctions Formed by □pin-On Dopant□*IEEE Electron Device Letters*, **2011**, 32, 1203-1205	4.4	38
82	Fabrication of Self-Aligned Enhancement-Mode $ hbox{In}_{0.53}hbox{Ga}_{0.47}hbox{As}$ MOSFETs With $ hbox{TaN/HfO}_{2}hbox{/AlN}$ Gate Stack. *IEEE Electron Device Letters*, **2008**, 29, 557-560	4.4	38
81	Anomalous spin polarization of GaAs two-dimensional hole systems. *Physical Review B*, **2005**, 72,	3.3	38
80	Magnetotransport properties of quasi-free-standing epitaxial graphene bilayer on SiC: evidence for Bernal stacking. *Nano Letters*, **2011**, 11, 3624-8	11.5	34
79	Chemical and physical interface studies of the atomic-layer-deposited Al2O3 on GaAs substrates. *Applied Physics Letters*, **2008**, 92, 223501	3.4	34
78	Role of density imbalance in an interacting bilayer hole system. *Physical Review Letters*, **2003**, 91, 076802	7.4	34
77	Intrinsic disorder in graphene on transition metal dichalcogenide heterostructures. *Nano Letters*, **2015**, 15, 1925-9	11.5	33
76	Role of confinement on carrier transport in Ge-Si(x)Ge(1-x) core-shell nanowires. *Nano Letters*, **2012** , 12, 108-12	11.5	32
75	Bilayer Pseudospin Field-Effect Transistor: Applications to Boolean Logic. *IEEE Transactions on Electron Devices*, **2010**, 57, 755-764	2.9	32
74	Ballistic electron transport in AlAs quantum wells. *Physical Review Letters*, **2004**, 93, 246603	7.4	32
73	Highly valley-polarized singlet and triplet interlayer excitons in van der Waals heterostructure. *Physical Review B*, **2019**, 100,	3.3	26
72	Self-aligned inversion-type enhancement-mode GaAs metal-oxide-semiconductor field-effect transistor with Al2O3 gate dielectric. *Applied Physics Letters*, **2008**, 92, 203505	3.4	26
71	Raman spectroscopy and strain mapping in individual Ge-SixGe1□ core-shell nanowires. *Physical Review B*, **2012**, 86,	3.3	25

70	Negative differential Rashba effect in two-dimensional hole systems. *Applied Physics Letters*, **2004**, 85, 3151-3153	3.4	25
69	Effects of Electrode Layer Band Structure on the Performance of Multilayer Graphene-hBN-Graphene Interlayer Tunnel Field Effect Transistors. *Nano Letters*, **2016**, 16, 4975-81	11.5	24
68	$hbox{Ge-Si}_{x}hbox{Ge}_{1 - x}$ Core□Shell Nanowire Tunneling Field-Effect Transistors. *IEEE Transactions on Electron Devices*, **2010**, 57, 1883-1888	2.9	24
67	Spin susceptibility of interacting two-dimensional electrons with anisotropic effective mass. *Physical Review B*, **2007**, 76,	3.3	24
66	Effect of oxide overlayer formation on the growth of gold catalyzed epitaxial silicon nanowires. *Applied Physics Letters*, **2006**, 88, 103113	3.4	24
65	Coherently Strained Si-SixGe1-x Core-Shell Nanowire Heterostructures. *Nano Letters*, **2016**, 16, 392-8	11.5	22
64	Self-aligned graphene field-effect transistors with polyethyleneimine doped source/drain access regions. *Applied Physics Letters*, **2012**, 101, 183113	3.4	22
63	Spin-Conserving Resonant Tunneling in Twist-Controlled WSe-hBN-WSe Heterostructures. *Nano Letters*, **2018**, 18, 5967-5973	11.5	21
62	Improved contact resistance in ReSe2 thin film field-effect transistors. *Applied Physics Letters*, **2016**, 108, 162104	3.4	20
61	Hall mobility measurements in enhancement-mode GaAs field-effect transistors with Al2O3 gate dielectric. *Applied Physics Letters*, **2010**, 97, 213506	3.4	19
60	Enhanced-Performance Germanium Nanowire Tunneling Field-Effect Transistors Using Flash-Assisted Rapid Thermal Process. *IEEE Electron Device Letters*, **2010**, 31, 1359-1361	4.4	19
59	Strong Aharonov-Bohm oscillations in GaAs two-dimensional holes. *Applied Physics Letters*, **2007**, 90, 152104	3.4	18
58	In-plane magnetodrag between dilute two-dimensional systems. *Physical Review Letters*, **2003**, 90, 226801	7.4	18
57	Coulomb drag near the metal-insulator transition in two dimensions. *Physical Review B*, **2005**, 71,	3.3	18
56	Doping of Ge□SixGe1□ core-shell nanowires using low energy ion implantation. *Applied Physics Letters*, **2008**, 93, 203108	3.4	17
55	Spin-dependent resistivity at transitions between integer quantum hall states. *Physical Review Letters*, **2005**, 94, 176402	7.4	17
54	Critical resistance in the AlAs quantum Hall ferromagnet. *Physical Review Letters*, **2003**, 91, 216802	7.4	15
53	DFT simulations of inter-graphene-layer coupling with rotationally misaligned hBN tunnel barriers in graphene/hBN/graphene tunnel FETs. *Journal of Applied Physics*, **2016**, 120, 134310	2.5	14

52	Oxidized titanium as a gate dielectric for graphene field effect transistors and its tunneling mechanisms. *ACS Nano*, **2014**, 8, 10480-5	16.7	13
51	Intra-domain periodic defects in monolayer MoS2. *Applied Physics Letters*, **2017**, 110, 201905	3.4	12
50	Tunable K Valley Populations in Hole-Doped Trilayer WSe_{2}. *Physical Review Letters*, **2018**, 120, 107703	7.4	12
49	Pinning modes and interlayer correlation in high-magnetic-field bilayer Wigner solids. *Physical Review Letters*, **2007**, 99, 136804	7.4	12
48	Effective mass and spin susceptibility of dilute two-dimensional holes in GaAs. *Physical Review B*, **2011**, 84,	3.3	11
47	Atomically Resolved Elucidation of the Electrochemical Covalent Molecular Grafting Mechanism of Single Layer Graphene. *Advanced Materials Interfaces*, **2016**, 3, 1600196	4.6	11
46	High-mobility AlAs quantum wells with out-of-plane valley occupation. *Applied Physics Letters*, **2006** , 89, 172118	3.4	10
45	Josephson Junction Field-Effect Transistors for Boolean Logic Cryogenic Applications. *IEEE Transactions on Electron Devices*, **2019**, 66, 5367-5374	2.9	10
44	On the fabrication of three-dimensional silicon-on-insulator based optical phased array for agile and large angle laser beam steering systems. *Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics*, **2010**, 28, C6O1-C6O7	1.3	9
43	Giant frictional drag in strongly interacting bilayers near filling factor one. *Physical Review B*, **2009**, 79,	3.3	9
42	In-plane magnetic-field-induced metal-insulator transition in (311)A GaAs two-dimensional hole systems probed by thermopower. *Physical Review B*, **2007**, 76,	3.3	9
41	Realization of an interacting two-valley AlAs bilayer system. *Physical Review Letters*, **2004**, 92, 186404	7.4	9
40	Enhanced Electron Mobility in Nonplanar Tensile Strained Si Epitaxially Grown on SiGe Nanowires. *Nano Letters*, **2018**, 18, 94-100	11.5	9
39	Interlayer tunnel field-effect transistor (ITFET): physics, fabrication and applications. *Journal Physics D: Applied Physics*, **2017**, 50, 383002	3	8
38	Tunneling and fluctuating electron-hole Cooper pairs in double bilayer graphene. *Physical Review B*, **2020**, 101,	3.3	7
37	QUANTUM HALL EFFECT IN A MULTI-VALLEY TWO-DIMENSIONAL ELECTRON SYSTEM. *International Journal of Modern Physics B*, **2007**, 21, 1388-1397	1.1	7
36	Anomalous giant Rashba spin splitting in two-dimensional hole systems. *Physica E: Low-Dimensional Systems and Nanostructures*, **2002**, 12, 428-431	3	7
35	High Phosphorus Dopant Activation in Germanium Using Laser Spike Annealing. *IEEE Electron Device Letters*, **2016**, 37, 1088-1091	4.4	6

34	Shell morphology and Raman spectra of epitaxial GeSixGe1x and SiSixGe1x core-shell nanowires. *Journal of Applied Physics*, **2017**, 121, 234302	2.5	5
33	InSb pixel loaded microwave resonator for high-speed mid-wave infrared detection. *Infrared Physics and Technology*, **2020**, 109, 103390	2.7	5
32	ReS2-based interlayer tunnel field effect transistor. *Journal of Applied Physics*, **2017**, 122, 245701	2.5	5
31	Strain and Hole Gas Induced Raman Shifts in Ge-Si(x)Ge(1-x) Core-Shell Nanowires Using Tip-Enhanced Raman Spectroscopy. *Nano Letters*, **2015**, 15, 4303-10	11.5	5
30	Transport spectroscopy in bilayer graphene using double layer heterostructures. *2D Materials*, **2017**, 4, 035018	5.9	5
29	Mean Free Path Suppression of Low-Frequency Phonons in SiGe Nanowires. *Nano Letters*, **2020**, 20, 8384-8391	11.5	4
28	Vertically integrated double-layer on-chip silicon membranes for 1-to-12 waveguide fanouts. *Applied Physics Letters*, **2012**, 100, 181102	3.4	4
27	Negative Differential Resistance in Buried-Channel $hbox{Ge}_{x} hbox{C}_{1 - x}$ pMOSFETs. *IEEE Electron Device Letters*, **2009**, 30, 136-138	4.4	4
26	Charge neutral counterflow transport at filling factor 1 in GaAs hole bilayers. *Solid State Communications*, **2007**, 144, 405-408	1.6	4
25	Frictional drag between dilute two-dimensional hole systems. *Physica E: Low-Dimensional Systems and Nanostructures*, **2004**, 22, 300-303	3	4
24	Magnetism and pseudo-magnetism in quantum Hall systems. *Physica E: Low-Dimensional Systems and Nanostructures*, **2003**, 20, 123-132	3	4
23	Measurement of carrier lifetime in micron-scaled materials using resonant microwave circuits. *Nature Communications*, **2019**, 10, 1625	17.4	3
22	Room-Temperature Mid-Infrared Detection via Resonant Microwave Circuits. *IEEE Transactions on Electron Devices*, **2020**, 67, 1632-1638	2.9	3
21	Realization and Scaling of ${rm Ge}{hbox{--}}{rm Si}_{1{hbox{-}}{rm x}}{rm Ge}_{rm x}$ Core-Shell Nanowire n-FETs. *IEEE Transactions on Electron Devices*, **2013**, 60, 4027-4033	2.9	3
20	Delay-Time-Enhanced Flat-Band Photonic Crystal Waveguides with Capsule-Shaped Holes on Silicon Nanomembrane. *IEEE Journal of Selected Topics in Quantum Electronics*, **2009**, 15, 1510-1514	3.8	3
19	Spin-dependent resistivity and quantum Hall ferromagnetism in two-dimensional electrons confined to AlAs quantum wells. *Physica E: Low-Dimensional Systems and Nanostructures*, **2006**, 34, 89-92	3	3
18	Hysteretic resistance spikes at transitions between quantum Hall ferromagnets in AlAs 2D electrons. *Physica E: Low-Dimensional Systems and Nanostructures*, **2002**, 12, 36-38	3	3
17	Fabrication of Three-Dimensional MIS Nano-Capacitor Based on Nanoimprinted Single Crystal Silicon Nanowire Arrays. *Micro and Nanosystems*, **2012**, 4, 333-338	0.6	3

16	Electron mobility in monolayer WS2 encapsulated in hexagonal boron-nitride. *Applied Physics Letters*, **2021**, 118, 102105	3.4	3
15	Epitaxial Al-InAs Heterostructures as Platform for Josephson Junction Field-Effect Transistor Logic Devices. *IEEE Transactions on Electron Devices*, **2021**, 68, 1524-1529	2.9	3
14	Protein-Assembled Nanocrystal-Based Vertical Flash Memory Devices with Al2O3 Integration. *Journal of Electronic Materials*, **2009**, 38, 438-442	1.9	2
13	Valley susceptibility of interacting electrons and composite fermions. *Physica E: Low-Dimensional Systems and Nanostructures*, **2008**, 40, 986-989	3	2
12	Zeeman splitting of interacting two-dimensional electrons with two effective masses. *Solid State Communications*, **2006**, 140, 285-288	1.6	2
11	Bilayer counterflow transport at filling factor 1 in the strong interacting regime. *Physica E: Low-Dimensional Systems and Nanostructures*, **2006**, 34, 11-15	3	2
10	COUNTERFLOW MEASUREMENTS IN GaAs HOLE BILAYERS: POSSIBLE EVIDENCE FOR EXCITONIC CONDENSATION. *International Journal of Modern Physics B*, **2004**, 18, 3685-3692	1.1	2
9	Wire-textured silicon solar cells **2010**,		1
8	Thermopower evidence for Wigner crystallization in the insulating phase of two-dimensional GaAs bilayer hole systems. *Physica E: Low-Dimensional Systems and Nanostructures*, **2006**, 34, 120-123	3	1
7	Strained SixGe1−x-Ge-Si core-double-shell nanowire heterostructures for simultaneous hole and electron mobility enhancement. *Applied Physics Letters*, **2018**, 113, 113102	3.4	1
6	Bulk and edge properties of twisted double bilayer graphene. *Nature Physics*, **2022**, 18, 48-53	16.2	1
5	Quantum Lifetime Spectroscopy and Magnetotunneling in Double Bilayer Graphene Heterostructures. *Physical Review Letters*, **2021**, 127, 117701	7.4	0
4	Coulomb drag experiments in low density 2D hole bilayers. *Physica E: Low-Dimensional Systems and Nanostructures*, **2006**, 34, 63-68	3	
3	Interacting GaAs bilayer hole systems with layer density imbalance. *Physica E: Low-Dimensional Systems and Nanostructures*, **2004**, 22, 32-35	3	
2	Measurements of the effective g-factor in dilute GaAs 2D electrons. *Physica E: Low-Dimensional Systems and Nanostructures*, **2002**, 12, 420-423	3	
1	QUANTUM HALL EFFECT IN AlAs 2D ELECTRON SYSTEMS. *International Journal of Modern Physics B*, **2002**, 16, 2917-2922	1.1	