Cemal Basaran

List of Publications by Year
in descending order

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159	3,818	35	53
papers	citations	h-index	g-index
		109321	168389

166	166	166	1853
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Thermomigration in Pbâ€“Sn solder joints under joule heating during electric current stressing. Applied Physics Letters, 2003, 82, 1045-1047.	3.3	229
2	An Irreversible Thermodynamics Theory for Damage Mechanics of Solids. International Journal of Damage Mechanics, 2004, 13, 205-223.	4.2	191
3	Failure modes and FEM analysis of power electronic packaging. Finite Elements in Analysis and Design, 2002, 38, 601-612.	3.2	138
4	A thermodynamic model for electrical current induced damage. International Journal of Solids and Structures, 2003, 40, 7315-7327.	2.7	102
5	MoirÃ© interferogram phase extraction: a ridge detection algorithm for continuous wavelet transforms. Applied Optics, 2004, 43, 850.	2.1	100
6	A micromechanical model for effective elastic properties of particulate composites with imperfect interfacial bonds. International Journal of Solids and Structures, 2005, 42, 4179-4191.	2.7	84
7	Thermomechanical behavior of micron scale solder joints under dynamic loads. Mechanics of Materials, 2000, 32, 161-173.	3.2	76
8	Damage mechanics of electromigration induced failure. Mechanics of Materials, 2008, 40, 66-79.	3.2	73
9	The size effect in mechanical properties of finite-sized graphene nanoribbon. Computational Materials Science, 2014, 81, 269-274.	3.0	73
10	A Damage Mechanics-Based Fatigue Life Prediction Model for Solder Joints. Journal of Electronic Packaging, Transactions of the ASME, 2003, 125, 120-125.	1.8	63
11	Joule heating in single-walled carbon nanotubes. Journal of Applied Physics, 2009, 106, .	2.5	62
12	Computational damage mechanics of electromigration and thermomigration. Journal of Applied Physics, 2013, 114, .	2.5	61
13	A thermodynamics based damage mechanics model for particulate composites. International Journal of Solids and Structures, 2007, 44, 1099-1114.	2.7	59
14	Measuring intrinsic elastic modulus of Pb/Sn solder alloys. Mechanics of Materials, 2002, 34, 349-362.	3.2	58
15	An analytical model for thermal stress analysis of multi-layered microelectronic packaging. Mechanics of Materials, 2004, 36, 369-385.	3.2	57
16	Mechanical degradation of microelectronics solder joints under current stressing. International Journal of Solids and Structures, 2003, 40, 7269-7284.	2.7	56
17	A thermodynamics based damage mechanics constitutive model for low cycle fatigue analysis of microelectronics solder joints incorporating size effects. International Journal of Solids and Structures, 2005, 42, 3744-3772.	2.7	56
18	Electromigration induced stress analysis using fully coupled mechanicalâ€“diffusion equations with nonlinear material properties. Computational Materials Science, 2005, 34, 82-98.	3.0	54

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19	Damage mechanics constitutive model for Pb/Sn solder joints incorporating nonlinear kinematic hardening and rate dependent effects using a return mapping integration algorithm. Mechanics of Materials, 2006, 38, 585-598.	3.2	54
20	Mechanics of Pb40/Sn60 near-eutectic solder alloys subjected to vibrations. Applied Mathematical Modelling, 1998, 22, 601-627.	4.2	53
21	Damage mechanics of microelectronics solder joints under high current densities. International Journal of Solids and Structures, 2003, 40, 4021-4032.	2.7	53
22	Implementation of a Thermodynamic Framework for Damage Mechanics of Solder Interconnects in Microelectronics Packaging. International Journal of Damage Mechanics, 2002, 11, 87-108.	4.2	51
23	A computational damage mechanics model for thermomigration. Mechanics of Materials, 2009, 41, 271-278.	3.2	46
24	Atomistic modeling of Î²-Sn surface energies and adatom diffusivity. Applied Surface Science, 2010, 256, 4402-4407.	6.1	44
25	The effect of Stone-Wales defects on the mechanical behavior of graphene nano-ribbons. Computational Materials Science, 2016, 124, 142-150.	3.0	44
26	Experimental verification of thermodynamic fatigue life prediction model using entropy as damage metric. Materials Science and Technology, 2015, 31, 1627-1632.	1.6	41
27	Experimental Damage Mechanics of Microelectronics Solder Joints under Concurrent Vibration and Thermal Loading. International Journal of Damage Mechanics, 2001, 10, 153-170.	4.2	40
28	Thermomechanical Analysis of Solder Joints Under Thermal and Vibrational Loading. Journal of Electronic Packaging, Transactions of the ASME, 2002, 124, 60-66.	1.8	40
29	Lattice Strain Due to an Atomic Vacancy. International Journal of Molecular Sciences, 2009, 10, 2798-2808.	4.1	40
30	Numerical algorithms and mesh dependence in the disturbed state concept. International Journal for Numerical Methods in Engineering, 1997, 40, 3059-3083.	2.8	38
31	Experimental damage mechanics of microelectronic solder joints under fatigue loading. Mechanics of Materials, 2004, 36, 1111-1121.	3.2	38
32	Pb phase coarsening in eutectic Pb/Sn flip chip solder joints under electric current stressing. International Journal of Solids and Structures, 2004, 41, 2743-2755.	2.7	38
33	Thermomigration induced degradation in solder alloys. Journal of Applied Physics, 2008, 103, .	2.5	38
34	Electromigration analysis of solder joints under ac load: A mean time to failure model. Journal of Applied Physics, 2012, 111, .	2.5	38
35	Deformation of solder joint under current stressing and numerical simulationâ€"â€"I. International Journal of Solids and Structures, 2004, 41, 4939-4958.	2.7	35
36	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" display="inline"><mml:mrow><mml:mi>Î²</mml:mi><mml:mtext>-Sn</mml:mtext></mml:mrow></mml:math>grain-boundary structure and self-diffusivity via molecular dynamics simulations. Physical Review B, 2010, 81, .	3.2	35

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37	Nanoindentation of Pb/Sn solder alloys; experimental and finite element simulation results. International Journal of Solids and Structures, 2006, 43, 1505-1527.	2.7	34
38	Electromigration induced strain field simulations for nanoelectronics lead-free solder joints. International Journal of Solids and Structures, 2007, 44, 4909-4924.	2.7	34
39	Influence of Thermomigration on Lead-Free Solder Joint Mechanical Properties. Journal of Electronic Packaging, Transactions of the ASME, 2009, 131, .	1.8	33
40	Influence of Microstructure Coarsening on Thermomechanical Fatigue Behavior of Pb/Sn Eutectic Solder Joints. International Journal of Damage Mechanics, 2001, 10, 235-255.	4.2	32
41	Measurement of high electrical current density effects in solder joints. Microelectronics Reliability, 2003, 43, 2021-2029.	1.7	32
42	Using finite element analysis for simulation of reliability tests on solder joints in microelectronic packaging. Computers and Structures, 2000, 74, 215-231.	4.4	30
43	Damage mechanics of electromigration in microelectronics copper interconnects. International Journal of Materials and Structural Integrity, 2007, 1, 16.	0.1	30
44	Thermomigration Versus Electromigration in Microelectronics Solder Joints. IEEE Transactions on Advanced Packaging, 2009, 32, 627-635.	1.6	30
45	A Creep Model for Solder Alloys. Journal of Electronic Packaging, Transactions of the ASME, 2011, 133, .	1.8	29
46	Temperature dependence of Joule heating in Zigzag Graphene Nanoribbon. Carbon, 2015, 89, 169-175.	10.3	28
47	Mesh Sensitivity and FEA for Multi-Layered Electronic Packaging. Journal of Electronic Packaging, Transactions of the ASME, 2001, 123, 218-224.	1.8	27
48	Electromigration damage mechanics of lead-free solder joints under pulsed DC: A computational model. Computational Materials Science, 2013, 71, 76-88.	3.0	27
49	Influence of vacancy defects on the damage mechanics of graphene nanoribbons. International Journal of Damage Mechanics, 2017, 26, 29-49.	4.2	27
50	Experimental Damage Mechanics of Micro/Power Electronics Solder Joints under Electric Current Stresses. International Journal of Damage Mechanics, 2006, 15, 41-67.	4.2	26
51	A framework for stress computation in single-walled carbon nanotubes under uniaxial tension. Computational Materials Science, 2009, 46, 1135-1143.	3.0	26
52	Comparison of fracture behavior of defective armchair and zigzag graphene nanoribbons. International Journal of Damage Mechanics, 2019, 28, 325-345.	4.2	26
53	Impact of geometry on transport properties of armchair graphene nanoribbon heterojunction. Carbon, 2017, 124, 422-428.	10.3	25
54	Damage mechanics of electromigration and thermomigration in lead-free solder alloys under alternating current: An experimental study. International Journal of Damage Mechanics, 2014, 23, 203-221.	4.2	24

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55	Influence of filler content and interphase properties on large deformation micromechanics of particle filled acrylics. Mechanics of Materials, 2013, 57, 134-146.	3.2	23
56	A Review of Damage, Void Evolution, and Fatigue Life Prediction Models. Metals, 2021, 11, 609.	2.3	23
57	Sensitivity improvement in phase-shifted moireÂ´ interferometry using 1-D continuous wavelet transform image processing. Optical Engineering, 2003, 42, 2646.	1.0	22
58	Mechanical Properties of Hydrogen Edgeâ€"Passivated Chiral Graphene Nanoribbons. Journal of Nanomechanics & Micromechanics, 2015, 5, .	1.4	22
59	Low Cycle Fatigue Life Prediction Using Unified Mechanics Theory in Ti-6Al-4V Alloys. Entropy, 2020, 22, 24.	2.2	21
60	Electromigration time to failure of SnAgCuNi solder joints. Journal of Applied Physics, 2009, 106, .	2.5	20
61	Effective diffusivity of lead free solder alloys. Computational Materials Science, 2009, 47, 71-78.	3.0	20
62	Unraveling mechanics of armchair and zigzag graphene nanoribbons. International Journal of Damage Mechanics, 2017, 26, 447-462.	4.2	20
63	Deformation of solder joint under current stressing and numerical simulationâ€"â€"II. International Journal of Solids and Structures, 2004, 41, 4959-4973.	2.7	19
64	Automatic Full Strain Field MoirÃ© Interferometry Measurement with Nano-scale Resolution. Experimental Mechanics, 2008, 48, 665-673.	2.0	19
65	Mechanical and electronic properties of graphene nanomesh heterojunctions. Computational Materials Science, 2018, 153, 64-72.	3.0	19
66	Thermomechanical Stress Analysis of Multi-Layered Electronic Packaging. Journal of Electronic Packaging, Transactions of the ASME, 2003, 125, 134-138.	1.8	18
67	Influence of Interfacial Bond Strength on Fatigue Life and Thermo-Mechanical Behavior of a Particulate Composite: An Experimental Study. International Journal of Damage Mechanics, 2008, 17, 123-147.	4.2	18
68	Effect of Cu and Ag solute segregation on <i>Î²</i>Sn grain boundary diffusivity. Journal of Applied Physics, 2011, 110, 013528.	2.5	18
69	A multiscale modeling technique for bridging molecular dynamics with finite element method. Journal of Computational Physics, 2013, 253, 64-85.	3.8	18
70	The effects of vacancy defect on the fracture behaviors of zigzag graphene nanoribbons. International Journal of Damage Mechanics, 2017, 26, 608-630.	4.2	18
71	Simulating Damage Mechanics of Electromigration and Thermomigration. Simulation, 2008, 84, 391-401.	1.8	17
72	Damage Mechanics of Low Temperature Electromigration and Thermomigration. IEEE Transactions on Advanced Packaging, 2009, 32, 478-485.	1.6	17

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73	Micro-deformation mechanisms in thermoformed alumina trihydrate reinforced poly(methyl) Tj ETQq1 1 0.784314 rgBT /Overlock 10 Tf Microstructure and Processing, 2009, 523, 160-172.	5.6	17
74	Low temperature electromigration and thermomigration in lead-free solder joints. Mechanics of Materials, 2009, 41, 1223-1241.	3.2	17
75	Damage Mechanics Modeling of Concurrent Thermal and Vibration Loading on Electronics Packaging. Multidiscipline Modeling in Materials and Structures, 2006, 2, 309-326.	1.3	16
76	Thermomigration in lead-free solder joints. International Journal of Materials and Structural Integrity, 2008, 2, 11.	0.1	16
77	Statistical phase-shifting step estimation algorithm based on the continuous wavelet transform for high-resolution interferometry metrology. Applied Optics, 2011, 50, 586.	2.1	16
78	Parity conservation in electron-phonon scattering in zigzag graphene nanoribbon. Applied Physics Letters, 2014, 105, 113112.	3.3	16
79	Predicting high cycle fatigue life with unified mechanics theory. Mechanics of Materials, 2022, 164, 104116.	3.2	16
80	Experimental verification of improvement of phase shifting moireÂ´ interferometry using wavelet-based image processing. Optical Engineering, 2004, 43, 1206.	1.0	15
81	Time Dependent Behavior of a Particle Filled Composite PMMA/ATH at Elevated Temperatures. Journal of Composite Materials, 2008, 42, 2003-2025.	2.4	15
82	Semi-classical transport for predicting joule heating in carbon nanotubes. Physics Letters, Section A: General, Atomic and Solid State Physics, 2010, 374, 2475-2479.	2.1	15
83	Modeling ultrasonic vibration fatigue with unified mechanics theory. International Journal of Solids and Structures, 2022, 236-237, 111313.	2.7	15
84	Mechanical Implications of High Current Densities in Flip-chip Solder Joints. International Journal of Damage Mechanics, 2004, 13, 335-345.	4.2	14
85	Electrostatic Doping-Based All GNR Tunnel FET: An Energy-Efficient Design for Power Electronics. IEEE Transactions on Electron Devices, 2019, 66, 1971-1978.	3.0	14
86	A cyclic two-surface thermoplastic damage model with application to metallic plate dampers. Engineering Structures, 2013, 52, 608-620.	5.3	13
87	SELECTING A TEMPERATURE TIME HISTORY FOR PREDICTING FATIGUE LIFE OF MICROELECTRONICS SOLDER JOINTS. Journal of Thermal Stresses, 2001, 24, 1063-1083.	2.0	12
88	Failure Mechanisms in PMMA/ATH Acrylic Casting Dispersion. Journal of the Mechanical Behavior of Materials, 2006, 17, 79-96.	1.8	12
89	Determination of Strain Gradient Plasticity Length Scale for Microelectronics Solder Alloys. Journal of Electronic Packaging, Transactions of the ASME, 2007, 129, 120-128.	1.8	12
90	Hot phonons contribution to Joule heating in single-walled carbon nanotubes. Journal of Applied Physics, 2012, 112, 103527.	2.5	12

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91	Effect of Ni solute on grain boundary diffusivity and structure of Î²Sn. Computational Materials Science, 2014, 92, 1-7.	3.0	12
92	Introduction to Unified Mechanics Theory with Applications. , 2021, , .		12
93	Coarsening in BGA Solder Balls: Modeling and Experimental Evaluation. Journal of Electronic Packaging, Transactions of the ASME, 2003, 125, 426-430.	1.8	11
94	Influence of Interfacial Compliance on Thermomechanical Stresses in Multilayered Microelectronic Packaging. IEEE Transactions on Advanced Packaging, 2006, 29, 666-673.	1.6	11
95	Strained phononâ€"phonon scattering in carbon nanotubes. Computational Materials Science, 2016, 112, 87-91.	3.0	11
96	Aspect ratio effect on shear modulus and ultimate shear strength of graphene nanoribbons. Diamond and Related Materials, 2017, 74, 9-15.	3.9	11
97	Impact of electrostatic doping level on the dissipative transport in graphene nanoribbons tunnel field-effect transistors. Carbon, 2019, 153, 120-126.	10.3	11
98	Anisotropy of Graphene Nanoflake Diamond Interface Frictional Properties. Materials, 2019, 12, 1425.	2.9	11
99	Closed form vs. finite element analysis of laminated stacks. Finite Elements in Analysis and Design, 1999, 32, 163-179.	3.2	10
100	The prediction of the effective charge number in single-walled carbon nanotubes using Monte Carlo simulation. Carbon, 2011, 49, 425-434.	10.3	10
101	The Unravelling of Open-Ended Single Walled Carbon Nanotubes Using Molecular Dynamics Simulations. Journal of Electronic Packaging, Transactions of the ASME, 2011, 133, .	1.8	10
102	Reduced impedance and superconductivity of SnAgCu solder alloy at high frequency. Electronic Materials Letters, 2012, 8, 503-505.	2.2	10
103	An accelerated algorithm for full band electronâ€"phonon scattering rate computation. Computer Physics Communications, 2014, 185, 3392-3397.	7.5	10
104	A unified mechanics theory-based model for temperature and strain rate dependent proportionality limit stress of mild steel. Mechanics of Materials, 2021, 155, 103762.	3.2	10
105	Solute Effects on Î²-Sn Grain Boundary Energy and Shear Stress. Journal of Nanomechanics & Micromechanics, 2011, 1, 41-50.	1.4	9
106	Far-field modeling of MoirÃ© interferometry using scalar diffraction theory. Optics and Lasers in Engineering, 2012, 50, 1168-1176.	3.8	9
107	Phonon dispersion and quantization tuning of strained carbon nanotubes for flexible electronics. Journal of Applied Physics, 2014, 115, 243702.	2.5	9
108	Phononâ€"phonon scattering rates in single walled carbon nanotubes. Computational Materials Science, 2015, 103, 151-156.	3.0	9

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109	Electric pulse induced impedance and material degradation in IC chip packaging. Electronic Materials Letters, 2013, 9, 565-568.	2.2	8
110	Influence of hot phonons on wind forces in metallic single walled carbon nanotubes. Carbon, 2013, 57, 59-64.	10.3	8
111	Molecular dynamics of viscoplasticity in Î²-tin lattice and grain boundary. Computational Materials Science, 2013, 68, 290-296.	3.0	8
112	Entropy Based Fatigue, Fracture, Failure Prediction and Structural Health Monitoring. Entropy, 2020, 22, 1178.	2.2	8
113	A quantum mechanical formulation of electron transport induced wind forces in metallic single-walled carbon nanotubes. Carbon, 2010, 48, 47-53.	10.3	7
114	Electromigration in lead-free solder joints under high-frequency pulse current: An experimental study. International Journal of Damage Mechanics, 2013, 22, 1127-1143.	4.2	7
115	Shear Strength of Square Graphene Nanoribbons beyond Wrinkling. Journal of Electronic Materials, 2018, 47, 3891-3896.	2.2	7
116	Dynamic Equilibrium Equations in Unified Mechanics Theory. Applied Mechanics, 2021, 2, 63-80.	1.5	7
117	Analysis of Multilayered Microelectronic Packaging Under Thermal Gradient Loading. IEEE Transactions on Components and Packaging Technologies, 2006, 29, 850-855.	1.3	6
118	Computational implementation of Cosserat continuum. International Journal of Materials and Product Technology, 2009, 34, 3.	0.2	6
119	Numerical algorithms and mesh dependence in the disturbed state concept. International Journal for Numerical Methods in Engineering, 1997, 40, 3059-3083.	2.8	6
120	Implementation of a Thermodynamic Framework for Damage Mechanics of Solder Interconnects in Microelectronic Packaging. , 2002, , 61.		5
121	Analysis of multi-layered microelectronic packaging under uniformly distributed loading. International Journal of Solids and Structures, 2003, 40, 3331-3345.	2.7	4
122	Measuring Joule heating and strain induced by electrical current with MoirÃ© interferometry. Journal of Applied Physics, 2011, 109, 074908.	2.5	4
123	Influence of defects on dissipative transport in graphene nanoribbons tunnel field-effect transistor. Nanotechnology, 2020, 31, 045703.	2.6	4
124	Thermodynamics Theory for Damage Evolution in Solids. , 2015, , 721-762.		4
125	An Analytical Model for Thermal Stress Analysis of Multi-layered Microelectronic Packaging. , 2005, , .		3
126	A Viscoplasticity Model for Solder Alloys. , 2010, , .		3

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127	Electron-phonon scattering and Joule heating in copper at extreme cold temperatures. Computational Materials Science, 2018, 149, 397-408.	3.0	3
128	Unified Disturbed State Concept For Metals and Alloys. Journal of the Mechanical Behavior of Materials, 1999, 10, 279-310.	1.8	2
129	Introduction for JEP Special Issue on Carbon Nanotubes. Journal of Electronic Packaging, Transactions of the ASME, 2011, 133, .	1.8	2
130	Thermodynamic Theory for Damage Evolution in Solids. , 2014, , 1-39.		2
131	Mechanical Implications of High Current Densities in Flip Chip Solder Joints. , 2002, , .		2
132	High current density electron wind forces in metallic graphene nanoribbons. Nanotechnology, 2020, 31, 355203.	2.6	2
133	Damage of SAC405 solder joint under PDC. , 2012, , .		1
134	Mean time to failure of SnAgCuNi solder joints under DC. , 2012, , .		1
135	Near field modeling of the MoirÃ© interferometer for nanoscale strain measurement. Optics and Lasers in Engineering, 2012, 50, 976-984.	3.8	1
136	Atomic-Level Shear Stress-Strain Behavior of Î²-Sn. Journal of Nanomechanics & Micromechanics, 2013, 3, .	1.4	1
137	Predicting elastic modulus of particle filled composites. International Journal of Materials and Structural Integrity, 2013, 7, 100.	0.1	1
138	A semi-infinite edge dislocation model for the proportionality limit stress of metals under high strain rate. Computational Mechanics, 2021, 68, 545-565.	4.0	1
139	Experimental Study of Thermomigration in Lead-Free Nanoelectronics Solder Joints. , 2006, , .		1
140	Unified mechanics theory based flow stress model for the rate-dependent behavior of bcc metals. Materials Today Communications, 2022, 31, 103707.	1.9	1
141	Elastic Modulus of Pb/Sn Solder Joints in Microelectronics. , 2002, , 141.		0
142	Irreversible Thermodynamics for Damage Mechanics of Solid Materials. , 2002, , 193.		0
143	Damage Mechanics of Solder Joints under High Current Density. Key Engineering Materials, 2007, 345-346, 1403-1410.	0.4	0
144	Low temperature electromigration and thermomigration in lead-free solder joints. , 2008, , .		0

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145	Statistical phase shifting step estimation based on continuous wavelet transform for high resolution interferometry metrology. , 2010, , .		0
146	Special Issue on Nanomechanics of Solids and Interfaces with Molecular Dynamic Simulations. Journal of Nanomechanics & Micromechanics, 2011, 1, 2-2.	1.4	0
147	Solder joint grain boundary structure and diffusivity via molecular dynamics simulations. , 2012, , .		0
148	A velocity averaging method for bridging molecular dynamics with finite element analysis. , 2012, , .		0
149	Modeling Joule heating in carbon nanotubes with Monte Carlo simulations. , 2012, , .		0
150	Damage Mechanics Unified Constitutive Modeling for Polymers. , 2014, , 1-37.		0
151	Unified Micromechanics of Particulate Composites. , 2021, , 277-342.		0
152	Unified Mechanics of Metals under High Electrical Current Density: Electromigration and Thermomigration. , 2021, , 395-425.		0
153	Unified Mechanics Theory. , 2021, , 115-202.		0
154	Length Scale in Solder Joints Materials. , 2006, , .		0
155	Thermomigration Induced Strain Field Simulation for Microelectronic Lead Free Solder Joints. , 2006, , .		0
156	Damage Mechanics of Carbon Nano Tubes Under Uniaxial Tension. , 2009, , .		0
157	Electromigration Damage Mechanics of Interconnects. , 2009, , .		0
158	Damage Mechanics Unified Constitutive Modeling for Polymers. , 2015, , 681-720.		0
159	Unification of newtonian mechanics and thermodynamics. MOJ Civil Engineering, 2016, 1, .	0.3	0