## Carl-Mikael G Zetterling

List of Publications by Year in descending order

Source: https://exaly.com/author-pdf/1489173/publications.pdf Version: 2024-02-01



#	Article	IF	CITATIONS
1	Deposition of diamond films on single crystalline silicon carbide substrates. Diamond and Related Materials, 2020, 101, 107625.	1.8	11
2	A Silicon Carbide 256 Pixel UV Image Sensor Array Operating at 400 °C. IEEE Journal of the Electron Devices Society, 2020, 8, 116-121.	1.2	8
3	Wide Bandgap Integrated Circuits for High Power Management in Extreme Environments. , 2020, , 167-178.		О
4	500Â\$^circ\$C SiC PWM Integrated Circuit. IEEE Transactions on Power Electronics, 2019, 34, 1997-2001.	5.4	9
5	500°C SiC-based driver IC for SiC power MOSFETs. , 2019, , .		3
6	Silicon Carbide Bipolar Analog Circuits for Extreme Temperature Signal Conditioning. IEEE Transactions on Electron Devices, 2019, 66, 3764-3770.	1.6	8
7	555-Timer and Comparators Operational at 500 °C. IEEE Transactions on Electron Devices, 2019, 66, 3734-3739.	1.6	11
8	Towards Silicon Carbide VLSI Circuits for Extreme Environment Applications. Electronics (Switzerland), 2019, 8, 496.	1.8	20
9	High-Temperature Recessed Channel SiC CMOS Inverters and Ring Oscillators. IEEE Electron Device Letters, 2019, 40, 670-673.	2.2	15
10	Investigation of a Self-Aligned Cobalt Silicide Process for Ohmic Contacts to Silicon Carbide. Journal of Electronic Materials, 2019, 48, 2509-2516.	1.0	2
11	A 4H-SiC BJT as a Switch for On-Chip Integrated UV Photodiode. IEEE Electron Device Letters, 2019, 40, 51-54.	2.2	10
12	15 kV-Class Implantation-Free 4H-SiC BJTs With Record High Current Gain. IEEE Electron Device Letters, 2018, 39, 63-66.	2.2	37
13	Scaling and Modeling of High Temperature 4H-SiC p-i-n Photodiodes. IEEE Journal of the Electron Devices Society, 2018, 6, 139-145.	1.2	5
14	500 °C, High Current Linear Voltage Regulator in 4H-SiC BJT Technology. IEEE Electron Device Letters, 2018, 39, 548-551.	2.2	13
15	A 600 °C TTL-based 11-stage Ring Oscillator in Bipolar Silicon Carbide Technology. IEEE Electron Device Letters, 2018, , 1-1.	2.2	20
16	Bipolar integrated circuits in SiC for extreme environment operation. Semiconductor Science and Technology, 2017, 32, 034002.	1.0	28
17	A Fully Integrated Silicon-Carbide Sigma–Delta Modulator Operating up to 500 °C. IEEE Transactions on Electron Devices, 2017, 64, 2782-2788.	1.6	14
18	Integration and High-Temperature Characterization of Ferroelectric Vanadium-Doped Bismuth Titanate Thin Films on Silicon Carbide. Journal of Electronic Materials, 2017, 46, 4478-4484.	1.0	4

## Carl-Mikael G Zetterling

#	Article	IF	CITATIONS
19	High Gamma Ray Tolerance for 4H-SiC Bipolar Circuits. IEEE Transactions on Nuclear Science, 2017, 64, 852-858.	1.2	18
20	A Comprehensive Study on the Geometrical Effects in High-Power 4H–SiC BJTs. IEEE Transactions on Electron Devices, 2017, 64, 882-887.	1.6	4
21	High frequency characteristic of a monolithic 500 °C OpAmp-RC integrator in SiC bipolar IC technology. Solid-State Electronics, 2017, 135, 65-70.	0.8	2
22	SiC BJT Compact DC Model With Continuous- Temperature Scalability From 300 to 773 K. IEEE Transactions on Electron Devices, 2017, 64, 3588-3594.	1.6	10
23	500 °C High Current 4H-SiC Lateral BJTs for High-Temperature Integrated Circuits. IEEE Electron Device Letters, 2017, 38, 1429-1432.	2.2	22
24	A Wafer-Scale Ni-Salicide Contact Technology on n-Type 4H-SiC. ECS Journal of Solid State Science and Technology, 2017, 6, P197-P200.	0.9	13
25	Material aspects of wide temperature range amplifier design in SiC bipolar technologies. Journal of Materials Research, 2016, 31, 2928-2935.	1.2	2
26	High-temperature passive components for extreme environments. , 2016, , .		8
27	Silicon Carbide Fully Differential Amplifier Characterized Up to 500 °C. IEEE Transactions on Electron Devices, 2016, 63, 2242-2247.	1.6	21
28	State of the art power switching devices in SiC and their applications. , 2016, , .		5
29	Intertwined Design: A Novel Lithographic Method to Realize Area Efficient High-Voltage SiC BJTs and Darlington Transistors. IEEE Transactions on Electron Devices, 2016, 63, 4366-4372.	1.6	6
30	A 500 °C 8-b Digital-to-Analog Converter in Silicon Carbide Bipolar Technology. IEEE Transactions on Electron Devices, 2016, 63, 3445-3450.	1.6	15
31	Wide temperature range integrated amplifier in bipolar 4H-SiC technology. , 2016, , .		2
32	550 °C 4H-SiC p-i-n Photodiode Array With Two-Layer Metallization. IEEE Electron Device Letters, 2016, 37, 1594-1596.	2.2	24
33	Wide Temperature Range Integrated Bandgap Voltage References in 4H–SiC. IEEE Electron Device Letters, 2016, 37, 146-149.	2.2	22
34	A study on positive-feedback configuration of a bipolar SiC high temperature operational amplifier. Solid-State Electronics, 2016, 116, 33-37.	0.8	16
35	Integrated circuits in silicon carbide for high-temperature applications. MRS Bulletin, 2015, 40, 431-438.	1.7	40
36	Influence of Passivation Oxide Thickness and Device Layout on the Current Gain of SiC BJTs. IEEE Electron Device Letters, 2015, 36, 11-13.	2.2	24

CARL-MIKAEL G ZETTERLING

#	Article	IF	CITATIONS
37	5.8-kV Implantation-Free 4H-SiC BJT With Multiple-Shallow-Trench Junction Termination Extension. IEEE Electron Device Letters, 2015, 36, 168-170.	2.2	25
38	Single-step synthesis process of Ti 3 SiC 2 ohmic contacts on 4H-SiC by sputter-deposition of Ti. Scripta Materialia, 2015, 99, 53-56.	2.6	30
39	Conductivity modulated on-axis 4H-SiC 10+ kV PiN diodes. , 2015, , .		18
40	500 °C Bipolar SiC Linear Voltage Regulator. IEEE Transactions on Electron Devices, 2015, 62, 1953-1957.	1.6	30
41	Optimal Emitter Cell Geometry in High Power 4H-SiC BJTs. IEEE Electron Device Letters, 2015, 36, 1069-1072.	2.2	9
42	Area- and efficiency-optimized junction termination for a 5.6 kV SiC BJT process with low ON-resistance. , 2015, , .		13
43	A monolithic SiC drive circuit for SiC Power BJTs. , 2015, , .		15
44	SiC Etching and Sacrificial Oxidation Effects on the Performance of 4H-SiC BJTs. Materials Science Forum, 2014, 778-780, 1005-1008.	0.3	18
45	Characterization of La <sub>x</sub> Hf <sub>y</sub> O Gate Dielectrics in 4H-SiC MOS Capacitor. Materials Science Forum, 2014, 778-780, 549-552.	0.3	2
46	A Monolithic, 500 °C Operational Amplifier in 4H-SiC Bipolar Technology. IEEE Electron Device Letters, 2014, 35, 693-695.	2.2	63
47	Effects of 3-MeV Protons on 4H-SiC Bipolar Devices and Integrated OR-NOR Gates. IEEE Transactions on Nuclear Science, 2014, 61, 1772-1776.	1.2	9
48	Lateral p-n-p Transistors and Complementary SiC Bipolar Technology. IEEE Electron Device Letters, 2014, 35, 428-430.	2.2	17
49	500\$^{circ}{m C}\$ Bipolar Integrated OR/NOR Gate in 4H-SiC. IEEE Electron Device Letters, 2013, 34, 1091-1093.	2.2	80
50	Process Variation Tolerant 4H-SiC Power Devices Utilizing Trench Structures. Materials Science Forum, 2013, 740-742, 809-812.	0.3	1
51	High-Temperature Characterization of 4H-SiC Darlington Transistors for Low Voltage Applications. Materials Science Forum, 2013, 740-742, 966-969.	0.3	2
52	Effects of 3 MeV protons on 4H-SiC bipolar devices and integrated OR-NOR gates. , 2013, , .		0
53	Metal Work-function and Doping-Concentration Dependent Barrier Height of Ni-Contacts to 4H-SiC with Metal-Embedded Nano-Particles. Materials Science Forum, 2012, 717-720, 857-860.	0.3	3
54	Investigation of Current Gain Degradation in 4H-SiC Power BJTs. Materials Science Forum, 2012, 717-720, 1131-1134.	0.3	1

#	Article	IF	CITATIONS
55	Present and future applications of Silicon Carbide devices and circuits. , 2012, , .		14
56	Growth and characterization of epitaxial Ti3GeC2 thin films on 4H-SiC(0001). Journal of Crystal Growth, 2012, 343, 133-137.	0.7	9
57	Future high temperature applications for SiC integrated circuits. Physica Status Solidi C: Current Topics in Solid State Physics, 2012, 9, 1647-1650.	0.8	16
58	Design and Characterization of High-Temperature ECL-Based Bipolar Integrated Circuits in 4H-SiC. IEEE Transactions on Electron Devices, 2012, 59, 1076-1083.	1.6	56
59	Removal of Crystal Orientation Effects on the Current Gain of 4H-SiC BJTs Using Surface Passivation. IEEE Electron Device Letters, 2011, 32, 596-598.	2.2	6
60	Effect of annealing temperature on the barrier height of nano-particle embedded Ni-contacts to 4H-SiC. , 2011, , .		1
61	Surface-Passivation Effects on the Performance of 4H-SiC BJTs. IEEE Transactions on Electron Devices, 2011, 58, 259-265.	1.6	57
62	Modeling and Characterization of the on-Resistance in 4H-SiC Power BJTs. IEEE Transactions on Electron Devices, 2011, 58, 2081-2087.	1.6	20
63	High-Voltage (2.8 kV) Implantation-Free 4H-SiC BJTs With Long-Term Stability of the Current Gain. IEEE Transactions on Electron Devices, 2011, 58, 2665-2669.	1.6	26
64	SiC power devices — Present status, applications and future perspective. , 2011, , .		223
65	SiC bipolar devices for high power and integrated drivers. , 2011, , .		5
66	Ohmic contact properties of magnetron sputtered Ti3SiC2 on n- and p-type 4H-silicon carbide. Applied Physics Letters, 2011, 98, .	1.5	67
67	High Voltage, Low On-Resistance 4H-SiC BJTs with Improved Junction Termination Extension. Materials Science Forum, 2011, 679-680, 706-709.	0.3	8
68	(Invited) Silicon Carbide Bipolar Power Devices. ECS Transactions, 2011, 41, 189-200.	0.3	0
69	Measurements and Simulations of Lateral PNP Transistors in a SiC NPN BJT Technology for High Temperature Integrated Circuits. Materials Science Forum, 2011, 679-680, 758-761.	0.3	1
70	Toward 4H-SiC MISFETs Devices Based on ONO (SiO2-Si3N4-SiO2) Structures. Journal of the Electrochemical Society, 2011, 158, H496.	1.3	6
71	Current Gain Degradation in 4H-SiC Power BJTs. Materials Science Forum, 2011, 679-680, 702-705.	0.3	4
72	Modeling and Characterization of Current Gain Versus Temperature in 4H-SiC Power BJTs. IEEE Transactions on Electron Devices, 2010, 57, 704-711.	1.6	56

#	Article	IF	CITATIONS
73	Influence of Emitter Width and Emitter–Base Distance on the Current Gain in 4H-SiC Power BJTs. IEEE Transactions on Electron Devices, 2010, 57, 2664-2670.	1.6	26
74	Experimental Evaluation of Different Passivation Layers on the Performance of 3kV 4H-SiC BJTs. Materials Science Forum, 2010, 645-648, 661-664.	0.3	7
75	Temperature Modeling and Characterization of the Current Gain in 4H-SiC Power BJTs. Materials Science Forum, 2010, 645-648, 1061-1064.	0.3	Ο
76	SiC Bipolar Power Transistors - Design and Technology Issues for Ultimate Performance. Materials Research Society Symposia Proceedings, 2010, 1246, 1.	0.1	5
77	Optimization of Poly-silicon Process for 3C-SiC Based MOS Devices. Materials Research Society Symposia Proceedings, 2010, 1246, 1.	0.1	Ο
78	Electrical properties of MOS structures based on 3C-SiC(111) epilayers grown by Vapor-Liquid-Solid Transport and Chemical-Vapor Deposition on 6H-SiC(0001). AIP Conference Proceedings, 2010, , .	0.3	1
79	Influence of crystal orientation on the current gain in 4H-SiC BJTs. , 2010, , .		Ο
80	Comparative study of thermally grown oxides on n-type free standing 3C-SiC (001). Journal of Applied Physics, 2009, 106, 044513.	1.1	15
81	Advanced oxidation process combining oxide deposition and short postoxidation step for N-type 3C- and 4H-SiC. Journal of Applied Physics, 2009, 106, 044514.	1.1	17
82	High-Voltage 4H-SiC PiN Diodes With Etched Junction Termination Extension. IEEE Electron Device Letters, 2009, 30, 1170-1172.	2.2	55
83	Implantation-Free Low On-Resistance 4H-SiC BJTs with Common-Emitter Current Gain of 50 and High Blocking Capability. Materials Science Forum, 2009, 615-617, 833-836.	0.3	7
84	Simulations of Open Emitter Breakdown Voltage in SiC BJTs with Non Implanted JTE. Materials Science Forum, 2009, 615-617, 841-844.	0.3	4
85	Low-Forward-Voltage-Drop 4H-SiC BJTs Without Base Contact Implantation. IEEE Transactions on Electron Devices, 2008, 55, 1907-1911.	1.6	14
86	High-Current-Gain SiC BJTs With Regrown Extrinsic Base and Etched JTE. IEEE Transactions on Electron Devices, 2008, 55, 1894-1898.	1.6	18
87	Corrections to "Low-Forward-Voltage-Drop 4H-SiC BJTs Without Base Contact Implantation". IEEE Transactions on Electron Devices, 2008, 55, 2531-2531.	1.6	2
88	Fabrication of 2700-V 12-\$hbox{m}Omega cdot hbox{cm}^{2}\$ Non Ion-Implanted 4H-SiCBJTs With Common-Emitter Current Gain of 50. IEEE Electron Device Letters, 2008, 29, 1135-1137.	2.2	35
89	Surface passivation oxide effects on the current gain of 4H-SiC bipolar junction transistors. Applied Physics Letters, 2008, 92, 082113.	1.5	25
90	Analysis of the base current and saturation voltage in 4H-SiC power BJTs. , 2007, , .		1

6

#	Article	IF	CITATIONS
91	Influence of the base contact on the electrical characteristics of SiC BJTs. , 2007, , .		4
92	Simultaneous study of nickel based ohmic contacts to Si-face and C-face of n-type silicon carbide. , 2007, , .		0
93	1200-V 5.2-\$hbox{m}Omegacdothbox{cm}^{2}\$ 4H-SiC BJTs With a High Common-Emitter Current Gain. IEEE Electron Device Letters, 2007, 28, 1007-1009.	2.2	46
94	Geometrical effects in high current gain 1100-V 4H-SiC BJTs. IEEE Electron Device Letters, 2005, 26, 743-745.	2.2	53
95	Ferroelectric thin films on silicon carbide for next-generation nonvolatile memory and sensor devices. Thin Solid Films, 2004, 469-470, 444-449.	0.8	15
96	<title>Thin films in silicon carbide semiconductor devices</title> . , 2004, , .		0
97	Investigation of thermal properties in fabricated 4H-SiC high power bipolar transistors. Solid-State Electronics, 2003, 47, 639-644.	0.8	5
98	Ferroelectric Pb(Zr0.52Ti0.48)/SiC field-effect transistor. Applied Physics Letters, 2003, 83, 3975-3977.	1.5	21
99	Processing and Properties of Ferroelectric Pb(Zr,Ti)O 3 /Silicon Carbide Field-Effect Transistor. Integrated Ferroelectrics, 2003, 57, 1221-1231.	0.3	0
100	Combination of JFET and MOSFET devices in 4H-SiC for high-temperature stable circuit operation. Electronics Letters, 2003, 39, 933.	0.5	2
101	Ferroelectric Pb(Zr,Ti)O3/Al2O3/4H–SiC diode structures. Applied Physics Letters, 2002, 81, 895-897.	1.5	14
102	Characterization of heterojunction diodes with hydride vapor phase epitaxy grown AlGaN on 4H–SiC. Journal of Applied Physics, 2002, 91, 2372-2379.	1.1	21
103	Ohmic contact formation on inductively coupled plasma etched 4H-silicon carbide. Journal of Electronic Materials, 2002, 31, 340-345.	1.0	9
104	Low resistivity ohmic contacts on 4H-silicon carbide for high power and high temperature device applications. Microelectronic Engineering, 2002, 60, 261-268.	1.1	31
105	The influence of band offsets on the IV characteristics for GaN/SiC heterojunctions. Solid-State Electronics, 2002, 46, 827-835.	0.8	18
106	Electrical characteristics of metal-oxide-semiconductor capacitors on plasma etch-damaged silicon carbide. Solid-State Electronics, 2002, 46, 1375-1380.	0.8	10
107	Reduction of the Schottky barrier height on silicon carbide using Au nano-particles. Solid-State Electronics, 2002, 46, 1433-1440.	0.8	69
108	Microscopic mapping of specific contact resistances and long-term reliability tests on 4H-silicon carbide using sputtered titanium tungsten contacts for high temperature device applications. Journal of Applied Physics, 2002, 92, 253-260.	1.1	10

Carl-Mikael G Zetterling

#	Article	IF	CITATIONS
109	Schottky barrier height dependence on the metal work function for p-type 4H-silicon carbide. Journal of Electronic Materials, 2001, 30, 242-246.	1.0	42
110	Inductively coupled plasma etch damage in 4Hâ^'SiC investigated by Schottky diode characterization. Journal of Electronic Materials, 2001, 30, 247-252.	1.0	22
111	Fabrication and characterization of heterojunction diodes with HVPE-grown GaN on 4H-SiC. IEEE Transactions on Electron Devices, 2001, 48, 444-449.	1.6	26
112	High density plasma via hole etching in SiC. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 2001, 19, 1878-1881.	0.9	31
113	Low resistivity ohmic titanium carbide contacts to n- and p-type 4H-silicon carbide. Solid-State Electronics, 2000, 44, 1179-1186.	0.8	48
114	Structural and electrical characteristics of oxygen-implanted 6H-SiC. Nuclear Instruments & Methods in Physics Research B, 2000, 169, 1-5.	0.6	7
115	Electrical characterization of TiC ohmic contacts to aluminum ion implanted 4H–silicon carbide. Applied Physics Letters, 2000, 77, 1478-1480.	1.5	32
116	Effect of UV light irradiation on SiC dry etch rates. Journal of Electronic Materials, 2000, 29, 342-346.	1.0	7
117	CVD-based tungsten carbide schottky contacts to 6H-SiC for very high-temperature operation. Journal of Electronic Materials, 2000, 29, 372-375.	1.0	28
118	Investigation of damage behaviour and isolation effect of n-type 6H-SiC by implantation of oxygen. Journal Physics D: Applied Physics, 2000, 33, 1551-1555.	1.3	6
119	Ultradeep, low-damage dry etching of SiC. Applied Physics Letters, 2000, 76, 739-741.	1.5	57
120	Schottky diode formation and characterization of titanium tungsten to n- and p-type 4H silicon carbide. Journal of Applied Physics, 2000, 87, 8039-8044.	1.1	43
121	Via-hole etching for SiC. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 1999, 17, 2050.	1.6	34
122	UV–ozone precleaning and forming gas annealing applied to wet thermal oxidation of p-type silicon carbide. Materials Science in Semiconductor Processing, 1999, 2, 23-27.	1.9	8
123	Simulation and electrical characterization of GaN/SiC and AlGaN/SiC heterodiodes. Materials Science and Engineering B: Solid-State Materials for Advanced Technology, 1999, 61-62, 320-324.	1.7	9
124	A study of optical characteristics of damage in oxygen-implanted 6H-SiC. Journal of Materials Science Letters, 1999, 18, 979-982.	0.5	2
125	Plasma chemistries for high density plasma etching of SiC. Journal of Electronic Materials, 1999, 28, 196-201.	1.0	31
126	Growth of SiC Thin Films on (100) and (111) Silicon by Pulsed Laser Deposition Combined with a Vacuum Annealing Process. Materials Research Society Symposia Proceedings, 1999, 572, 207.	0.1	0

#	Article	IF	CITATIONS
127	Simulation Study of on-state Losses as Function of Carrier Life-time for a GaN/SiC High Power HBT Design. Physica Scripta, 1999, T79, 290.	1.2	5
128	High rate etching of SiC and SiCN in NF3 inductively coupled plasmas. Solid-State Electronics, 1998, 42, 743-747.	0.8	23
129	Junction barrier Schottky diodes in 6H SiC. Solid-State Electronics, 1998, 42, 1757-1759.	0.8	15
130	ICP etching of SiC. Solid-State Electronics, 1998, 42, 2283-2288.	0.8	44
131	Inductively coupled plasma etching of bulk 6H-SiC and thin-film SiCN in NF3 chemistries. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1998, 16, 2204-2209.	0.9	57
132	Influence of growth conditions on electrical characteristics of AlN on SiC. Applied Physics Letters, 1997, 70, 3549-3551.	1.5	31
133	Investigation of aluminum nitride grown by metal–organic chemical-vapor deposition on silicon carbide. Journal of Applied Physics, 1997, 82, 2990-2995.	1.1	65
134	Formation and High Frequency CV-Measurements of Aluminum / Aluminum Nitride / 6H Silicon Carbide Structures. Materials Research Society Symposia Proceedings, 1996, 423, 667.	0.1	14
135	A novel UMOS capacitor test structure for SiC devices. Solid-State Electronics, 1996, 39, 1396-1397.	0.8	3
136	Thermal oxidation of n- and p-type 6H-silicon carbide. Physica Scripta, 1994, T54, 291-293.	1.2	9
137	Comparison of Thermal Gate Oxides on Silicon and Carbon Face P-Type 6H Silicon Carbide. Materials Research Society Symposia Proceedings, 1994, 339, 209.	0.1	7
138	Temperature stability of cobalt Schottky contacts on n- and p-type 6H silicon carbide. Applied Surface Science, 1993, 73, 316-321.	3.1	34
139	SiC device technology for high voltage and RF power applications. , 0, , .		2
140	Measurements and simulations of self-heating and switching with 4H-SiC power BJTs. , 0, , .		3
141	Thermal-issues for design of high power SiC MESFETs. , 0, , .		2
142	Silicon carbide devices and processes - present status and future pers. , 0, , .		2
143	Comparative Study of Thermal Oxides and Post-Oxidized Deposited Oxides on n-Type Free Standing 3C-SiC. Materials Science Forum, 0, 645-648, 829-832.	0.3	1
144	Bipolar Integrated OR-NOR Gate in 4H-SiC. Materials Science Forum, 0, 717-720, 1257-1260.	0.3	2

#	Article	IF	CITATIONS
145	Local Anodic Oxidation of Phosporous-Implanted 4H-SiC by Atomic Force Microscopy. Materials Science Forum, 0, 717-720, 905-908.	0.3	3
146	Area-Optimized JTE for 4.5 kV Non Ion-Implanted 4H-SiC BJT. Materials Science Forum, 0, 740-742, 974-977.	0.3	8
147	Fabrication and Design of 10 kV PiN Diodes Using On-Axis 4H-SiC. Materials Science Forum, 0, 778-780, 836-840.	0.3	6
148	Characterization of Ohmic Ni/Ti/Al and Ni Contacts to 4H-SiC from -40°C to 500°C. Materials Science Forum, 0, 778-780, 681-684.	0.3	8
149	Ultrafast Pulsed <i>I-V</i> and Charge Pumping Interface Characterization of Low-Voltage <i>n</i> -Channel SiC MOSFETs. Materials Science Forum, 0, 1004, 642-651.	0.3	1