

List of Publications:

1. *Application and improvement of the spreading resistance method for p-type 6H-SiC*
T. Gebel, D. Panknin, R. Riehn, S. Parascandola, W. Skorupa,
Silicon Carbide and Related Materials - 1999, Materials Science Forum,
Vols. **338-342**, 741 (2000)
2. *Microstructure and electrical properties of gate-SiO₂ containing Ge-nanoclusters for memory applications*
H.-J. Thees, M. Wittmaack, K.-H. Stegemann, J. von Borany, K.-H. Heinig, **T. Gebel**,
Microelectronics Reliability **40**, 867 (2000)
3. *Memory effects of ion beam synthesized Ge and Si nanoclusters in SiO₂ layers*
T. Gebel, J. von Borany, W. Skorupa, W. Möller, H.-J. Thees, M. Wittmaack,
K.-H. Stegemann,
Mat. Res. Soc. Symp. Proc. **592**, T6.10.1 (2000)
4. *Microstructure and electrical properties of Ge- and Si-nanoclusters in implanted gate oxides for embedded memory applications*
K.-H. Stegemann, H.-J. Thees, M. Wittmaack, J. von Borany, K.-H. Heinig, **T. Gebel**,
Proc. of the 18th IIT conference 2000, Alpbach, Austria, IEEE-00EX432, 32 (2000)
5. *Effects of indirect ionization on the charge state distributions observed with highly charged ion sources*
M.P. Stockli, R. Becker, O. Delferriere, U. Lehnert, **T. Gebel**, F. Ullmann, N. Kobayashi,
J. Matsumoto,
Rev. Sci. Instrum. **71**, 1052-1055 (2000).
6. *Ion beam synthesis based formation of Ge-rich thermally grown SiO₂ layers: a promising approach for a silicon based light emitter*
T. Gebel, L. Rebohle, J. Zhao, D. Borchert, H. Fröb, J.v. Borany, W. Skorupa,
Mat. Res. Soc. Symp. Proc. **638**, F18.1.1 (invited) (2001)
7. *Flash lamp annealing of implantation doped p- and n-Type 6H-SiC*
D. Panknin, **T. Gebel**, W. Skorupa,
Silicon Carbide and Related Materials - 2001, Materials Science Forum, Vols. **353-356**, 587
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8. *Efficient blue light emission from silicon: The first integrated Si-based optocoupler*
L. Rebohle, J. von Borany, D. Borchert, H. Fröb, **T. Gebel**, M. Helm, W. Möller, W. Skorupa,
Electrochem. and Sol. St. Sc. Lett. **7**, G57 (2001)
9. *Non-volatile memories based on Si⁺ – implanted Gate oxides*
T. Gebel, J. von Borany, H.-J. Thees, M. Wittmaack, K.-H. Stegemann, W. Skorupa,
Microelectronic Engineering **59**, 247 (2001)
10. *Ion beam processing for Si/C-rich thermally grown SiO₂ layers: photoluminescence and microstructure*
L. Rebohle, **T. Gebel**, H. Fröb, H. Reuther, W. Skorupa,
Appl. Surf. Science **184**, 156 (2001)

11. *Flash lamp annealing with millisecond pulses for ultra shallow boron profiles in silicon*
T. Gebel, M. Voelskow, W. Skorupa, G. Mannino, V. Privitera, F. Priolo, Napolitani, A. Carnera,
 Nucl. Instr. Meth. B **186**, 287 (2002)

12. *Strong visible electroluminescence from Ge- and Sn-nanoclusters rich SiO₂ layers*
 L. Rebohle, **T. Gebel**, J. Zhao, J.v. Borany, H. Fröb, D. Borchert, W. Skorupa,
 Materials Science and Engineering C **19**, 373 (2002)

13. *Transient behaviour of the strong violet electroluminescence of Ge-implanted SiO₂ layers*
 L. Rebohle, **T. Gebel**, J. von Borany, W. Skorupa, M. Helm, D. Pacifici, G. Franzo, F. Priolo,
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14. *Bulk-limited conduction of Ge-implanted thermally grown SiO₂ layers*
 J. Zhao, L. Rebohle, **T. Gebel**, J. von Borany, W. Skorupa,
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15. *Memory properties of Si⁺ implanted gate oxides: From MOS to nv-SRAM*
 J. von Borany, **T. Gebel**, K.-H. Stegemann, H.-J. Thees, M. Wittmaack,
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16. *Ion beam synthesized nanoclusters for silicon-based light emission*
 L. Rebohle, J. von Borany, H. Fröb, **T. Gebel**, M. Helm, W. Skorupa,
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17. *Nanocluster-rich SiO₂ layers produced by ion beam synthesis: electrical and optoelectronic properties*
T. Gebel
 Dissertation / PhD thesis, published in Wissenschaftlich-Technische Berichte, FZ Rossendorf **FZR-350**, ISSN 1437-322X (2002)

18. *Charge trapping in light-emitting SiO₂ layers implanted with Ge⁺ ions*
T. Gebel, L. Rebohle, W. Skorupa, A.N. Nazarov, I.N. Osiyuk, V.S. Lysenko
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19. *Charge trapping and degradation in Ge⁺ ion implanted SiO₂ layers during high-field electron injection*
 A.N.Nazarov, I.N.Osiyuk, V.S.Lysenko, **T.Gebel**, L.Rebohle , W.Skorupa,
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20. *Nanostructures in SiO₂ layers: a promising approach for silicon based light emission*
T. Gebel
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21. *Electroluminescence from thin SiO₂ layers after Si- and C- coimplantation*
T. Gebel, L. Rebohle, J. Sun, W. Skorupa,
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22. *Correlation of charge trapping and electroluminescence in highly efficient Si-based light emitters*
T. Gebel, L. Rebohle, J. Sun, W. Skorupa, A.N. Nazarov, I. Osiyuk
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23. *Strong blue light emission from ion implanted Si/SiO₂ structures*
W. Skorupa, L. Rebohle, **T. Gebel**, M. Helm
in: L. Pavesi et al. (eds.), *Towards the First Silicon Laser*, 69-78 (2003)
24. *Group-IV nanocluster formation by ion beam synthesis*
W. Skorupa, L. Rebohle, **T. Gebel**
Appl. Phys. A **76**, 1049 - 1059 (2003)
25. *Nanocluster-based arrays of light emitters for Lab-on-a-Chip applications*
T. Gebel, L. Rebohle, R.A. Yankov, T. Trautmann, R. Müller, W. Skorupa, R. Frank, G. Gauglitz, F. Wetzel,
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26. *Trapping of negative and positive charges in Ge⁺ ion implanted silicon dioxide layers subjected to high-field electron injection*
A. N. Nazarov, **T. Gebel**, L. Rebohle, W. Skorupa, I. N. Osiyuk, V. S. Lysenko
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27. *Ion Beam Processing for Silicon - Based Light Emission*
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T. Gebel, L. Rebohle, R.A. Yankov, A.N. Nazarov, W. Skorupa,
Microwave and Optical technology, ed. by J. Pistora, *Proc. of SPIE Vol. 5445*, 284-289 (2004)
29. *Advanced Thermal Processing of Semiconductor Materials by Flash Lamp Annealing*
W. Skorupa, D. Panknin, M. Voelskow, W. Anwand, *The European FLASiC Consortium*, **T. Gebel**, R.A. Yankov, S. Paul, W. Lerch
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30. *Ultra shallow junctions produced by plasma doping and flash lamp annealing*
W. Skorupa, R.A. Yankov, W. Anwand, M. Voelskow, **T. Gebel**, D.F. Downey, E.A. Arevalo
Mat. Sc. Eng. **B114-115**, 358-361 (2004)
31. *Flash lamp annealing for the formation of ultra-shallow junctions*
W. Skorupa, R.A. Yankov, **T. Gebel**, W. Anwand, M. Voelskow
Advances in Electronic Manufacturing Technology, V-EMT 1:23 (Oct25, 2004),
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32. *Efficient ultraviolet electroluminescence from a Gd-implanted silicon-metal-oxide-semiconductor device*
J.M. Sun, W. Skorupa, T. Dekorsy, M. Helm, L. Rebohle, **T. Gebel**
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33. *Fabrication and evaluation of efficient light emitters comprising nanocluster-rich SiO₂ layers*
R.A. Yankov, **T. Gebel**, L. Rebohle, T. Trautmann, W. Skorupa, G. Gauglitz, R. Frank,
Photonic Crystal Materials and Nanostructures: Fabrication and evaluation of efficient light emitters comprising nanocluster-rich SiO₂ layers, *SPIE vol. 5450*, Bellingham, WA, USA: SPIE, 578-585 (2004)

34. *Advanced thermal processing of semiconductor materials in the millisecond range*
W. Skorupa, W. Anwand, D. Panknin, M. Voelskow, R.A. Yankov, **T. Gebel**,
Vacuum **78**, 673-677 (2005)
35. *Microarrays of silicon-based light emitters for novel biosensor and lab-on-a-chip applications*
L. Rebohle, **T. Gebel**, R.A. Yankov, T. Trautmann, W. Skorupa, J. Sun, G. Gauglitz, R. Frank
Optical Materials **27**, 1055-1058 (2005)
36. *Bright green electroluminescence from Tb³⁺ in silicon metal-oxide-semiconductor devices*
J.M. Sun, W. Skorupa, T. Dekorsy, M. Helm, L. Rebohle, **T. Gebel**
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37. *Rare earth ion implantation for silicon based light emission: from infrared to ultraviolet*
W. Skorupa, J.M. Sun, S. Prucnal, L. Rebohle, **T. Gebel**, A.N. Nazarov, I.N. Osiyuk, T. Dekorsy and M. Helm
Mater. Res. Soc. Symp. Proc. Vol. **866**, V4.1.1-4.1.12 (2005)
38. *The effect of radio-frequency plasma treatment on the electroluminescent properties of violet light-emitting germanium implanted metal-oxide-semiconductor structures*
A.N. Nazarov, J.N. Vovk, I.N. Osiyuk, A.S. Tkachenko, I.P. Tyagulskii, V. Lysenko, **T. Gebel**, L. Rebohle, W. Skorupa, R.A. Yankov
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39. *Advanced thermal processing of ultrashallow implanted junctions using flash lamp annealing*
W. Skorupa, **T. Gebel**, R.A. Yankov, S. Paul, W. Lerch, D.F. Downey, E.A. Arevalo
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40. *Light emission and charge trapping in Er-doped silicon dioxide films containing silicon nanocrystals*
A. Nazarov, J.M. Sun, W. Skorupa, R.A. Yankov, I.N. Osiyuk, I.P. Tjagulskii, V.S. Lysenko, **T. Gebel**
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41. *Comparative study of charge trapping in high-dose Si and Ge-implanted Al/SiO₂/Si structures*
A. Nazarov, W. Skorupa, I.N. Osiyuk, I.P. Tjagulskii, V.S. Lysenko, R.A. Yankov, **T. Gebel**
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42. *Rare earth ion implantation for silicon based light emission*
W. Skorupa, J.M. Sun, S. Prucnal, L. Rebohle, **T. Gebel**, A.N. Nazarov, I.N. Osiyuk, M. Helm
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43. *Miniaturised arrays of light-sources based on Silicon technology: A promising approach for novel sensors and Lab-on-a-Chip Systems*
T. Gebel, L. Rebohle, T. Trautmann, R.A. Yankov, W. Skorupa, G. Gauglitz, R. Frank,
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 W. Skorupa, R.A. Yankov, M. Voelskow, W. Anwand, D. Panknin, R.A. McMahon, M. Smith, **T. Gebel**, L. Rebohle, R. Fendler, W. Hentsch
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45. *Electroluminescence properties of the Gd³⁺ ultraviolet luminescent centers in SiO₂ gate oxide layers*
 J.M. Sun, S. Prucnal, W. Skorupa, T. Dekorsy, A. Mücklich, M. Helm, L. Rebohle, **T. Gebel**
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46. *Increase of blue electroluminescence from Ce-doped SiO₂ layers through sensitization by Gd³⁺ ions*
 J.M. Sun, S. Prucnal, W. Skorupa, M. Helm, L. Rebohle, **T. Gebel**
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47. *Traditional Hot-Electron MOS Devices for Novel Optoelectronic Applications*
 T. Dekorsy, J.M. Sun, W. Skorupa, M. Helm, L. Rebohle, **T. Gebel**
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48. *Millisecond annealing with flash lamps: Tool and process challenges*
T. Gebel, L. Rebohle, R. Fendler, W. Hentsch, W. Skorupa, M. Voelskow, W. Anwand, R. A. Yankov
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49. *Quenching of electroluminescence and charge trapping in high-efficiency Ge-implanted MOS light-emitting silicon diodes*
 A. Nazarov, I. Osiyuk, J. Sun, R. Yankov, W. Skorupa, I. Tyagulski, I. Lysenko, S. Prucnal, **T. Gebel**, L. Rebohle
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50. *Millisecond processing beyond chip technology: From electronics to photonics*
 W. Skorupa, W. Anwand, M. Posselt, S. Prucnal, L. Rebohle, M. Voelskow, S. Zhou, R.A. McMahon, M. Smith, **T. Gebel**, W. Hentsch, R. Fendler, T. Lühge, A. Satta, T. Moe Borseth, A. Yu. Kuznetsov, B.G. Svenson
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52. *Advances in Si&Ge millisecond processing: From silicon-on-insulator to superconducting Ge*
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53. *Millisecond-Annealing using flash lamps for improved performance of AZO layers*
T. Gebel, M. Neubert, R. Endler, J. Weber, M. Vinnichenko, A. Kolitsch, W. Skorupa, H. Liepack
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54. *Overcoming challenges to the formation of high-quality polycrystalline $TiO_2:Ta$ transparent conducting films by magnetron sputtering*
M. Neubert, S. Cornelius, J. Fiedler, **T. Gebel**, H. Liepack, A. Kolitsch, M. Vinnichenko,
Journal of Applied Physics 114, 083707 (2013)
55. *Formation of dendritic crystal structures in thin silicon films on silicon dioxide by carbon ion implantation and high intensity large area flash lamp irradiation*
M. Voelskow, R. Endler, T. Schumann, A. Mücklich, X. Ou; H. Liepack, **T. Gebel**, A. Peeva,
W. Skorupa, Journal of Crystal Growth 388, 70-75 (2014)
56. *A low thermal impact annealing process for SiO_2 -embedded Si nanocrystals with optimized interface quality*
D. Hiller, S. Gutsch, A.M. Hartel, P. Löper, **T. Gebel**, M. Zacharias,
Journal of Applied Physics 115, 134311 (2014)
57. *Modification / Crystallization of Nanolayers on Heat Sensitive Substrates (e.g. PET) by Ultrashort Thermal Annealing in the Millisecond Range*
T. Gebel, M. Neubert, H. Liepack,
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58. *Flash lamp annealing: (sub)millisecond thermal treatment of layers on heat sensitive substrates*
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