An adhesive bonding approach by hydrogen silsesquioxane for silicon carbide-based LED applications

We report an adhesive bonding approach using hydrogen silsesquioxane (HSQ) for silicon carbide (SiC) samples. A hybrid light-emitting diode (LED) was successfully fabricated through bonding a near-ultraviolet (NUV) LED grown on a commercial 4H-SiC substrate to a free-standing boron-nitrogen co-doped fluorescent-SiC epi-layer. The bonding quality and the electrical performance of the hybrid LED device were characterized. Neither voids nor defects were observed which indicates a good bonding quality of the proposed HSQ approach. A strong warm white emission was successfully obtained from the hybrid LED through an electric current injection of 30mA.

General information
State: Published
Organisations: Diode Lasers and LED Systems, Department of Photonics Engineering, DTU Danchip, CAS - Institute of Semiconductors, Linköping University, Friedrich-Alexander University Erlangen-Nürnberg
Pages: 9-12
Publication date: 2019
Peer-reviewed: Yes

Publication information
Journal: Materials Science in Semiconductor Processing
Volume: 91
ISSN (Print): 1369-8001
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 2.53 SJR 0.634 SNIP 0.992
Web of Science (2017): Impact factor 2.593
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.32 SJR 0.637 SNIP 0.993
Web of Science (2016): Impact factor 2.359
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 2.21 SJR 0.552 SNIP 0.963
Web of Science (2015): Impact factor 2.264
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 2.08 SJR 0.554 SNIP 1
Web of Science (2014): Impact factor 1.955
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 1.65 SJR 0.47 SNIP 0.831
Web of Science (2013): Impact factor 1.761
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 1.29 SJR 0.443 SNIP 0.738
Web of Science (2012): Impact factor 1.338
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 0.91 SJR 0.43 SNIP 0.695
Web of Science (2011): Impact factor 0.753
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.401 SNIP 0.465
Web of Science (2010): Impact factor 0.65
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.607 SNIP 0.581