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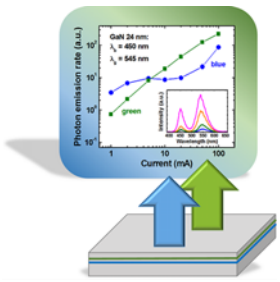
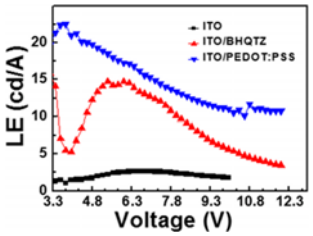


S. Yu. Karpov, N. A. Cherkashin, W. V. Lundin, A. E. Nikolaev, A. V. Sakharov, M. A. Sinitsin, S. O. Usov, E. E. Zavarin, and A. F. Tsatsulnikov

Multi-color monolithic III-nitride light-emitting diodes: Factors controlling emission spectra and efficiency [*Editor's Choice*]

Phys. Status Solidi A **213**(1), 19–29 (2016), **DOI** 10.1002/pssa.201532491

This paper considers various aspects of monolithic dual-wavelength blue/green LEDs, from growth and characterization of LED structures to both experimental and theoretical analysis of their operation. Major factors controlling their emission spectra and efficiency are thoroughly studied and discussed.

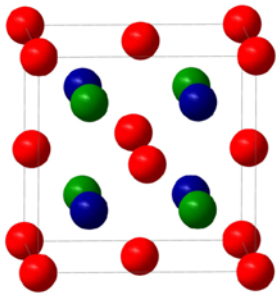


Yuan Li, Yuyuan Xue, Lianpeng Xia, Lintao Hou, and Xueqing Qiu

1,3,5-triazine crosslinked 2,5-dibromohydroquinone as new hole-transport material in polymer light-emitting diodes [*Original Paper*]

Phys. Status Solidi A **213**(2), 429–435 (2016), **DOI** 10.1002/pssa.201532507

Inspired by the electron-transfer process during oxidation of phenol and its derivatives, a novel hole-transport material (HTM) BHQTZ based on 1,3,5-triazine crosslinked 2,5-dibromohydroquinone is spin coated as the HTM in polymer light-emitting diodes and shows efficient hole-transport properties. This result provides a promising scaffold and concept for the design and feasible synthesis of HTM and the mechanism is based on the electron transfer during oxidation of BHQTZ, which is different from traditional electron-transport materials based on 1,3,5-triazine.

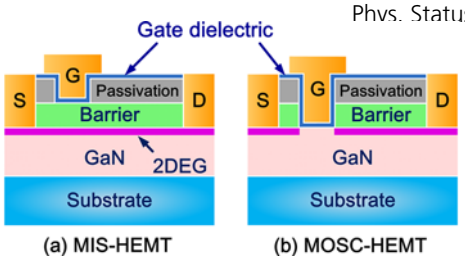


Gerhard H. Fecher, Elisabeth Rausch, Benjamin Balke, Anke Weidenkaff, and Claudia Felser

Half-Heusler materials as model systems for phase-separated thermoelectrics [*Original Paper*]

Phys. Status Solidi A **213**(3), 716–731 (2016), **DOI** 10.1002/pssa.201532595

Experiments have shown that phase-separated half-Heusler alloys are thermoelectric materials that work. The development of these alloys was assisted by theoretical calculations of the electronic structure of the basic materials in order to find optimised thermoelectric properties. Fecher et al. focus on electronic transport properties that play a major role with regard to the thermoelectric performance. Calculations are performed for well-ordered half-Heusler compounds with intrinsic semiconducting properties.

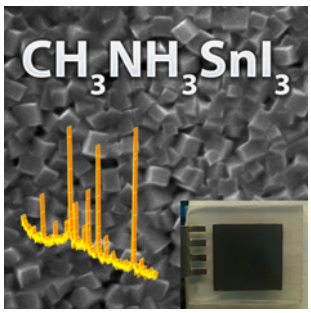


Kevin J. Chen, Shu Yang, Shenghou Liu, Cheng Liu, and Mengyuan Hua

Toward reliable MIS- and MOS-gate structures for GaN lateral power devices [*Feature Article*]

Phys. Status Solidi A **213**(4), 861–867 (2016), **DOI** 10.1002/pssa.201532873

To realize highly reliable MIS- and MOS-gate GaN power switching transistors, key techniques for gate stack have been developed. By combining partial gate recess, fluorine ion implantation and nitridation interfacial layer, thermally stable normally-off GaN transistors with low ON-resistance are achieved. Gate dielectric grown by low-pressure chemical vapor deposition at high temperature can significantly boost time-dependent dielectric breakdown and prolong dielectric lifetime.

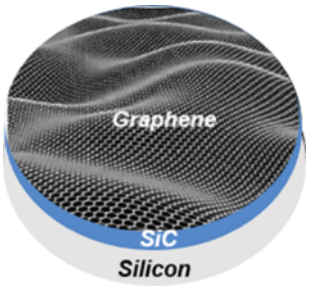


Manuel Weiss, Jonas Horn, Christoph Richter, and Derck Schlettwein

Preparation and characterization of methylammonium tin iodide layers as photovoltaic absorbers [*Editor's Choice*]

Phys. Status Solidi A **213**(4), 975–981 (2016), **DOI** 10.1002/pssa.201532594

Organic metal halides provide absorber layers for solar cells, which may not only revolutionize the fundamental view on solution-processed semiconductor materials but also the feasibility of sustainable large-scale photovoltaics. Presently the chemical instability of these materials and the toxicity of predominantly used lead hinder commercialization. Replacement of lead and preparation of chemically more stable materials may represent a significant step towards a technical realization of perovskite solar cells.

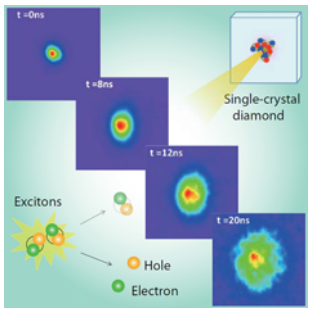


Neeraj Mishra, John Boeckl, Nunzio Motta, and Francesca Iacopi

Graphene growth on silicon carbide: A review [*Review Article*]

Phys. Status Solidi A **213**(9), 2277–2289 (2016), **DOI** 10.1002/pssa.201600091

This article provides a comprehensive review of the scientific progress of epitaxial graphene on silicon carbide and sketches its future perspectives. Strong focus is dedicated to recent progress in graphene growth on silicon carbide films onto silicon substrates. Integration of graphene with silicon is of great interest not just because of lower fabrication costs, but also since it would offer seamless integration with a vast array of silicon micro- and nanotechnologies for electronics, photoncs, and micro-electro-mechanical systems.

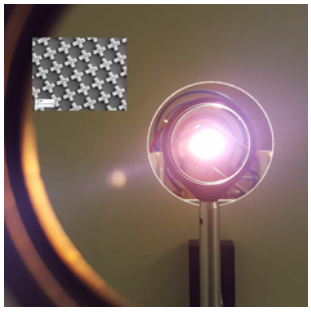


Nobuko Naka, Hikaru Morimoto, and Ikuko Akimoto

Excitons and fundamental transport properties of diamond under photo-injection [*Feature Article*]

Phys. Status Solidi A **213**(10), 2551–2563 (2016), **DOI** 10.1002/pssa.201600237

Recently, attempts at utilizing photo-injected carriers and excitons have been made to overcome difficulty in mobility measurement of diamond, which suffers carrier freezing at deep impurity levels. This article highlights a wealth of intriguing observations by time-resolved spectroscopy that deepens understanding of intrinsic diamond transport properties toward the realization of high-performance devices.



Nicole A. Pfiester and Thomas E. Vandervelde

Selective emitters for thermophotovoltaic applications [*Review Article*]

Phys. Status Solidi A **214**(1), 1600410 (2017), **DOI** 10.1002/pssa.201600410

The dramatic improvement of III–V film quality in the past decade has caused a resurgence in thermophotovoltaic (TPV) cell development. The selective emitter, as part of the complete TPV system, allows use of a wide range of energy sources. Early development of these emitters utilized inherent atomic properties while more recent technologies leverage complex electromagnetic effects to engineer custom solutions.