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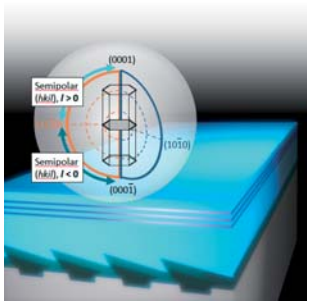
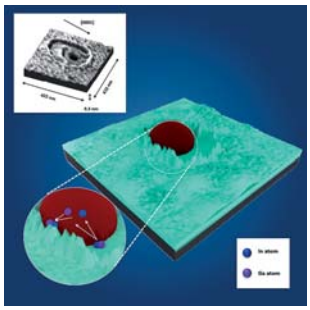


Benjamin Leung, Dili Wang, Yu-Sheng Kuo, and Jung Han

Complete orientational access for semipolar GaN devices on sapphire [*Feature Article*]

Phys. Status Solidi B **253**(1), 23–35 (2016), **DOI** 10.1002/pssb.201552301

Of the infinite varieties of polar, nonpolar and semipolar orientations for GaN, determining which one is the most promising for ultra-high efficiency light-emitting diodes has been a continuing exploration. Here, Leung et al. review the current picture of orientation-dependent material and device properties, uncovered by the use of bulk GaN substrates. The authors then show the same flexibility of accessing any orientation can be achieved with large area, cost effective sapphire substrates.

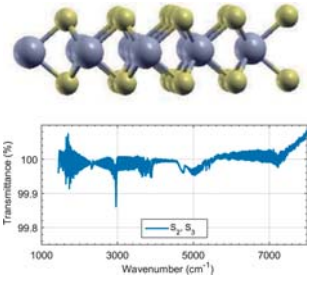


Helen Springbett, James Griffiths, Christopher Ren, Tom O'Hanlon, Jonathan Barnard, Suman-Lata Sahonta, Tongtong Zhu, and Rachel Oliver

Structure and composition of non-polar (11$\bar{2}$0)InGaN nanorings grown by modified droplet epitaxy [*Original Paper*]

Phys. Status Solidi B **253**(5), 840–844 (2016), **DOI** 10.1002/pssb.201552633

Nitride-based quantum dots (QDs) show promise as sources for single photon emission, enabling comparably high temperature emission and access to the blue and green spectral region. Some droplets forming during modified droplet epitaxy on non-polar (11$\bar{2}$0) surfaces of InGaN epilayers on GaN are associated with underlying ring-like structures. Springbett et al. discuss droplet etching as a possible mechanism for ring formation, whereby In and Ga atoms are incorporated into the droplet and diffuse to the edges.

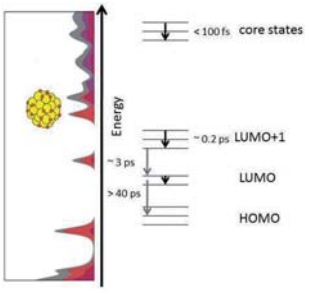


David Arcos, Daniel Gabriel, Dumitru Dumcenco, Andras Kis, and Núria Ferrer-Anglada

THz time-domain spectroscopy and IR spectroscopy on MoS_2 [*Original Paper*]

Phys. Status Solidi B **253**(12), 2499–2504 (2016), **DOI** 10.1002/pssb.201600281

In the increasing research field of 2D materials, molybdenum disulfide (MoS_2) has attracted great interest due to the existence of a direct bandgap in monolayer MoS_2, which gives the possibility of achieving MoS_2 field-effect transistors or optoelectronic devices. Arcos et al. studied the electronic properties of CVD monolayers of MoS_2 depending on the growth conditions, by controlling the growth direction of MoS_2 domains using H_2S as a gas-phase precursor, in addition to conventional sulfur. THz time-domain spectroscopy (THz-TDS) up to 2 THz and and infrared (IR) spectroscopy were used for analysis, coherence of both spectroscopic methods was observed.

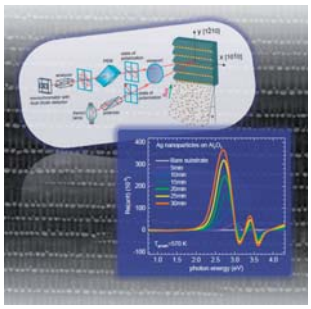


Xue Chen, Oleg V. Prezhdo, Zeyao Ma, Tingjun Hou, Zhenyu Guo, and Youyong Li

Ab initio phonon-coupled nonadiabatic relaxation dynamics of $[Au_{25}(SH)_{18}]^-$ clusters [*Original Paper*]

Phys. Status Solidi B **253**(3), 458–462 (2016), **DOI** 10.1002/pssb.201552405

Nanoscale gold clusters exhibit unique electronic and optical properties. Chen et al. study the excited state dynamics and electron–phonon coupling of $[Au_{25}(SH)_{18}]^-$ nanoclusters by using quantum-classical molecular dynamics combined with time-dependent density-functional theory. The result reproduces experimental measurements and provides further insights into the relaxation dynamics of ligand-protected gold clusters. The interplay between electron–phonon couplings and specific energy-transfer processes in $[Au_{25}(SH)_{18}]^-$ nanoclusters is clarified.

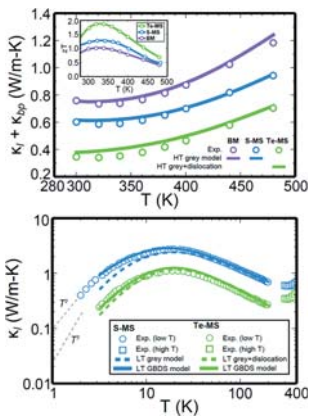


Karsten Fleischer, Oral Ualibek, Ruggero Verre, and Igor V. Shvets

Formation of plasmonic nanoparticle arrays – rules and recipes for an ordered growth [*Feature Article*]

Phys. Status Solidi B **253**(2), 198–205 (2016), **DOI** 10.1002/pssb.201552489

Self organised assemblies of metallic nanoparticles have attracted attention particularly for their use in plasmonic sensing. Fleischer et al. review the optimisation of 1D metallic nanoparticle arrays grown by glancing-angle deposition by employing in-situ optical monitoring by reflectance anisotropy. The properties of the arrays are discussed in terms of initial nucleation depending on growth temperature, substrate surface, and metal adsorbate.

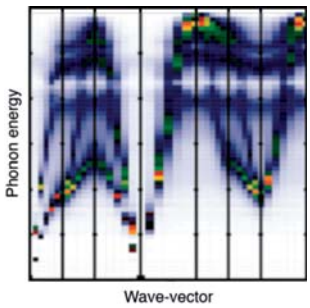


Hyun-Sik Kim, Sang Il Kim, Kyu Hyoung Lee, Sung Wng Kim, and G. Jeffrey Snyder

Phonon scattering by dislocations at grain boundaries in polycrystalline $Bi_{0.5}Sb_{1.5}Te_3$ [*Original Paper*]

Phys. Status Solidi B **254**, 1600103 (2017), **DOI** 10.1002/pssb.201600103

Reducing the lattice thermal conductivity (κ_l) of a thermoelectric material is one of the most popular strategies to improve its performance. Particularly, many efforts have been focused on decreasing the grain size and the boundary scattering. In addition, dense arrays of dislocations formed in the grain boundaries can further reduce κ_l by dislocation scattering. Kim et al. modelled the low-temperature κ_l of $(Bi_{0.25}Sb_{0.75})_2Te_3$ satisfactorily with grain-boundary dislocation scattering. Although the parameters in the phonon scattering mechanisms differ between the high and low temperature models, both models provide strong evidence for the presence of dislocation scattering in polycrystalline $(Bi_{0.25}Sb_{0.75})_2Te_3$.

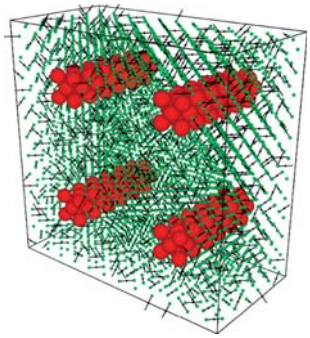


Alistair R. Overy, Arkadiy Simonov, Philip A. Chater, Matthew G. Tucker, and Andrew L. Goodwin

Phonon broadening from supercell lattice dynamics: Random and correlated disorder [*Editor's Choice*]

Phys. Status Solidi B **254**, 1600586 (2016), **DOI** 10.1002/pssb.201600586

Disorder broadens phonons, but can it also change the fundamental shape of the phonon dispersion curves? In this paper, a supercell lattice dynamical method is developed that determines the effect of static disorder on the form of the phonon dispersion curves. The authors show that both the nature and extent of disorder can have dramatic and non-trivial effects on vibrational states.



Jakub W. Narojczyk, Mikołaj Kowalik, and Krzysztof W. Wojciechowski

Influence of nanochannels on Poisson's ratio of degenerate crystal of hard dimers [*Original Paper*]

Phys. Status Solidi B **253**(7), 1324–1330 (2016), **DOI** 10.1002/pssb.201600212

Hard-body models reproduce many fundamental features of real physical systems and are convenient tools to study the role of molecular shape and its influence on the macroscopic, e.g. elastic, properties. Narojczyk et al. study a degenerate (aperiodic) crystal of hard dimers with arrays of nanochannels introduced in the direction [001] by Monte Carlo simulations. The nanochannels are filled by hard spheres of diameter 1, which may be different from diameter 2 of the spheres forming dimers. It is shown that, by modifying the ratio of the diameters, one can qualitatively modify the Poisson's ratio of the system. In particular, one can obtain partial auxetics (i.e. systems with negative Poisson's ratio in some directions) with auxetic directions [110] or [111].

