

Multifunctional materials for emerging technologies

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This presentation focuses on structure property/relationships in advanced materials, emphasizing multifunctional systems that exhibit multiple functionalities. Such systems are then used as building blocks for the fabrication of various emerging technologies. In particular, nanostructured materials synthesized via the bottom-up approach present an opportunity for future generation low cost manufacturing of devices [1]. We focus in particular on recent developments in solar technologies that aim to address the energy challenge, including third generation photovoltaics, solar hydrogen production, luminescent solar concentrators and other optoelectronic devices. [2-40].

References

[1] *J. Phys. Cond. Matt.* **16**, S1373 (2004); [2] *Adv. Mater.* **22**, 1741 (2010); [3] *J. Am. Chem. Soc.* **132**, 8868 (2010); [4] *Adv. Mater.* **23**, 1724 (2011); [5] *Appl. Phys. Lett.* **98**, 202902 (2011); [6] *Chem. Comm.* **48**, 8009 (2012); [7] *Adv. Func. Mater.* **22**, 3914 (2012); [8] *Nanoscale* **4**, 5588 (2012); [9] *Nanoscale* **5**, 873 (2013); [10] *J. Power Sources* **233**, 93 (2013); [11] *Chem. Comm.* **49**, 5856 (2013); [12] *J. Phys. Chem. C* **117**, 14510 (2013); [13] *Nature Phot.* **9**, 61 (2015); [14] *Nanoscale* **8**, 3237 (2016); [15] *Nano Energy* **27**, 265 (2016); [16] *Small* **12**, 3888 (2016); [17] *Nanotechnology* **27**, 215402 (2016); [18] *J. Mater. Chem. C* **4**, 3555 (2016); [19] *Sci. Rep.* **6**, 23312 (2016); [20] *Adv. En. Mater.* **6**, 1501913 (2016); [21] *Nanoscale* **8**, 4217 (2016); [22] *Adv. Sci.* **3**, 1500345 (2016); [23] *Small* **11**, 5741 (2015); [24] *Small* **11**, 4018 (2015); [25] *J. Mater. Chem. A* **3**, 2580 (2015); [26] *Nano Energy* **34**, 214 (2017); [27] *Nano Energy* **35**, 92 (2017); [28] *Adv. Func. Mater.* **27**, 1401468 (2017); [29] *Adv. En. Mater.* **8**, 1701432 (2018); [30] *Chem* **3**, 229 (2017); [31] *Nature Phot.* **12**, 271 (2018); [32] *Nano Energy* **55**, 377 (2019); [33] *Nanoscale Horiz.* **4**, 404 (2019); [34] *Appl. Cat. B* **250**, 234 (2019); *Adv. Func. Mater.* **29**, 1904501 (2019); [35] *ACS Photonics* **6**, 2479 (2019); [36] *Appl. Cat. B* **264**, 118526 (2020); [37] *Adv. Func. Mater.* **30**, 1908467 (2020); [38] *J. Mater. Chem. A* **8**, 20698 (2020); [39] *Nano Energy* **79**, 105416 (2021); [40] *Nano Energy* **81**, 105626 (2021).