

References

- Abraham, S., Ciobota, V., Srivastava, S., Srivastava, S.K., Singh, R.K., Dellith, J., Malhotra, B.D., Schmitt, M., Popp, J. and Srivastava, A., "Mesoporous silica particle embedded functional graphene oxide as an efficient platform for urea biosensing," *Analytical Methods*, **6** (2014) 6711–6720.
- Acevedo-Cartagena, D.E., Zhu, J., Trabanino, E., Pentzer, E., Emrick, T., Nonnenmann, S.S., Briseno, A.L. and Hayward, R.C., "Selective nucleation of poly (3-hexyl thiophene) nanofibers on multilayer graphene substrates," *ACS Macro Letters*, **4** (2015) 483-487.
- Akhavan, O., "Graphene nanomesh by ZnO nanorod photocatalysts," *ACS nano*, **4** (2010) 4174-4180.
- Allen, K.J., "Reel to real: Prospects for flexible displays," *Proceedings of the IEEE*, **93** (2005)1394-1399.
- Al-Ta'ii, H. M. J., Periasamy, V. and Amin, Y. M., "Humidity-dependent characteristics of DNA thin film-based Al/DNA/Al surface-type cell," *Sens. Actuators, B.*, **232** (2016) 195-202.
- Al-Ta'ii, H. M. J., Periasamy, V. and Amin, Y. M., "Detection of alpha particles using DNA/Al Schottky junctions," *J. Appl. Phys.*, **118** (2015) 114502-114509.
- Amendola, V., Bakr, O.M. and Stellacci, F., "A study of the surface plasmon resonance of silver nanoparticles by the discrete dipole approximation method: effect of shape, size, structure, and assembly," *Plasmonics*, **5** (2010) 85-97.
- Atkins, P. and de Paula, J., "Chemical equilibrium," Atkins' physical chemistry, 7th edn. Oxford University Press, Oxford, UK, 222-251, 2002.
- Atkins, P. and Paula, J. de, "Physical Chemistry," Oxford University Press, Oxford, UK, 2002.
- Ba, J., Polleux, J., Antonietti, M. and Niederberger, M., "Non-aqueous Synthesis of Tin Oxide Nanocrystals and Their Assembly into Ordered Porous Mesostructures," *Advanced Materials*, **17** (2005) 2509-2512.
- Bae, J.W., Kim, N.K., Choi, Y.S., Sohn, E.H., Lee, J.C. and Song, K., "Cardanol-based polymeric gate dielectric for solution-processed organic field-effect transistors on flexible substrates" *Organic Electronics*, **44** (2017) 144-148.
- Banerji, A., Tausch, M.W. and Scherf, U., "Classroom experiments and teaching materials on OLEDs with semiconducting polymers," *Educación Química*, **24** (2013)17-22.
- Bang, G. S., Cho, S., Son, N., Shim, G. W., Cho, B. K. and Choi, S. Y., "DNA-assisted exfoliation of tungsten dichalcogenides and their antibacterial effect," *ACS Appl. Mater. Interfaces*, **8** (2016) 1943-1950.

- Barford, W., "Exciton transfer integrals between polymer chains," *J. Chem. Phys.* **126** (2007) 134905-134917.
- Beaujuge, P.M. and Fréchet, J.M., "Molecular design and ordering effects in π -functional materials for transistor and solar cell applications," *J. Am. Chem. Soc.*, **133** (2011) 20009-20029.
- Beratan, D. N. and Waldeck, D. H., "DNA charge transfer: Hot holes break the speed limit," *Nat. Chem.*, **8** (2016) 992-993.
- Beratan, D. N., Liu, C., Migliore, A., Polizzi, N. F., Skourtis, S. S., Zhang, P. and Zhang, Y., "Charge transfer in dynamical biosystems, or the treachery of (static) images," *Acc. chem.res.*, **48** (2014) 474-481.
- Bhargava, K. and Singh, V., "High-sensitivity organic phototransistors prepared by floating film transfer method," *Applied Physics Express*, **9** (2016) 091601-091604.
- Bielecka, U., Lutsyk, P., Janus, K., Sworakowski, J. and Bartkowiak, W., "Effect of solution aging on morphology and electrical characteristics of regioregular P3HT FETs fabricated by spin coating and spray coating," *Organic Electronics*, **12** (2011) 1768-1776.
- Biju, V., Itoh, T., Anas, A., Sujith, A. and Ishikawa, M., "Semiconductor quantum dots and metal nanoparticles: syntheses, optical properties, and biological applications," *Analytical and bioanalytical chemistry*, **391** (2008) 2469-2495.
- Bilgaiyan, A., Dixit, T., Palani, I.A. and Singh, V., "Improved photoresponse of hybrid ZnO/P3HT bilayered photodetector obtained through oriented growth of ZnO nanorod arrays and the use of hole injection layer," *Journal of Electronic Materials*, **44** (2015) 2842-2848.
- Bilgaiyan, A., Dixit, T., Palani, I.A. and Singh, V., "Improved photoresponse of hybrid ZnO/P3HT bilayered photodetector obtained through oriented growth of ZnO nanorod arrays and the use of hole injection layer," *Journal of Electronic Materials*, **44** (2015) 2842-2848.
- Binieck, L., Leclerc, N., Heiser, T., Bechara, R. and Brinkmann, M., "Large scale alignment and charge transport anisotropy of pBTTT films oriented by high temperature rubbing," *Macromolecules*, **46** (2013) 4014-4023.
- Binieck, L., Pouget, S., Djurado, D., Gonthier, E., Tremel, K., Kayunkid, N., Zaborova, E., Crespo-Monteiro, N., Boyron, O., Leclerc, N. and Ludwigs, S., "High-temperature rubbing: a versatile method to align π -conjugated polymers without alignment substrate," *Macromolecules*, **47** (2014) 3871-3879.
- Borchardt, J.K., "Developments in organic displays," *Materials today*, **7** (2004) 42-46.
- Boruah, B.D., Mukherjee, A., Sridhar, S. and Misra, A., "Highly dense ZnO nanowires grown on graphene foam for ultraviolet photodetection," *ACS applied materials & interfaces*, **7** (2015) 10606-10611.

-
- Bose, S., Kuila, T., Mishra, A.K., Kim, N.H. and Lee, J.H., "Dual role of glycine as a chemical functionalizer and a reducing agent in the preparation of graphene: an environmentally friendly method," *Journal of Materials Chemistry*, **22** (2012) 9696-9703.
- Bose, S., Kuila, T., Uddin, M.E., Kim, N.H., Lau, A.K. and Lee, J.H., "In-situ synthesis and characterization of electrically conductive polypyrrole/graphene nanocomposites," *Polymer*, **51** (2010) 5921-5928.
- Bounioux, C., Avrahami, R., Vasilyev, G., Patil, N., Zussman, E. and Yerushalmi-Rozen, R., "Single-step electrospinning of multi walled carbon nanotubes-Poly (3-octylthiophene) hybrid nano-fibers," *Polymer*, **86** (2016) 15-21.
- Bredas, J. L. and Street, G. B., "Polarons, bipolarons, and solitons in conducting polymers," *Acc. Chem. Res.*, **18** (1985) 309-315.
- Brédas, J.L. and Silbey, R., *Conjugated polymers: the novel science and technology of highly conducting and nonlinear optically active materials*, Springer Science & Business Media, Germany, 352-353, 2012.
- Bredas, J.L., Chance, R.R. and Silbey, R., "Comparative theoretical study of the doping of conjugated polymers: polarons in polyacetylene and polyparaphenylene," *Physical Review B*, **26** (1982) 5843.
- Brinkmann, M. and Rannou, P., "Effect of molecular weight on the structure and morphology of oriented thin films of regioregular poly (3-hexylthiophene) grown by directional epitaxial solidification," *Advanced Functional Materials*, **17** (2007) 101-108.
- Brinkmann, M. and Rannou, P., "Molecular weight dependence of chain packing and semicrystalline structure in oriented films of regioregular poly (3-hexylthiophene) revealed by high-resolution transmission electron microscopy," *Macromolecules*, **42** (2009) 1125-1130.
- Burroughes, J. H., Bradley, D. D. C., Brown, A. R., Marks, R. N., Mackay, K., Friend, R. H., Burn, P. L. and Holmes, A. B., "Light-Emitting Diodes Based on Conjugated Polymers," *Nature*, **347** (1990) 539-541,.
- Burroughes, J. H., Jones, C. A. and Friend, R. H., "Polymer Diodes and Transistors: New Semiconductor Device Physics", *Nature*, **335** (1988)137-141.
- Byun, M., Laskowski, R.L., He, M., Qiu, F., Jeffries-El, M. and Lin, Z., "Controlled evaporative self-assembly of hierarchically structured regioregular conjugated polymers," *Soft Matter*, **5** (2009)1583-1586.
- Casalini, S., Bortolotti, C.A., Leonardi, F. and Biscarini, F., "Self-assembled monolayers in organic electronics," *Chemical Society Reviews*, **46** (2017) 40-71.
- Chang, M., Choi, D. and Egap, E., "Macroscopic alignment of one-dimensional conjugated polymer nanocrystallites for high-mobility organic field-effect transistors," *ACS applied materials & interfaces*, **8** (2016) 13484-13491.

-
- Chang, M., Su, Z. and Ekap, E., "Alignment and charge transport of one-dimensional conjugated polymer nanowires in insulating polymer blends," *Macromolecules*, **49** (2016) 9449-9456.
- Chao, D., Zhu, C., Xia, X., Liu, J., Zhang, X., Wang, J., Liang, P., Lin, J., Zhang, H., Shen, Z.X. and Fan, H.J., "Graphene quantum dots coated VO₂ arrays for highly durable electrodes for Li and Na ion batteries," *Nano letters*, **15** (2014) 565-573.
- Chen, D. and Gao, L., "Facile synthesis of single-crystal tin oxide nanorods with tunable dimensions via hydrothermal process," *Chemical physics letters*, **398** (2004) 201-206.
- Chen, J.Y., Wu, H.C., Chiu, Y.C., Lin, C.J., Tung, S.H. and Chen, W.C., "Electrospun Poly (3-hexylthiophene) Nanofibers with Highly Extended and Oriented Chains Through Secondary Electric Field for High-Performance Field-Effect Transistors" *Advanced Electronic Materials*, **1** (2015)1400028.
- Chen, N., Li, X., Wang, X., Yu, J., Wang, J., Tang, Z. and Akbar, S.A., "Enhanced room temperature sensing of Co₃O₄-intercalated reduced graphene oxide based gas sensors," *Sensors and Actuators B: Chemical*, **188** (2013) 902-908.
- Chiang, C. K., Gau, S. C., Fincher, C. R. J., Park, Y. W., MacDiarmid, A. G. and Heeger, A. J., "Polyacetylene, (CH)_x: n-type and p-type doping and compensation" *Appl. Phys. Lett.*, **33** (1978) 18-20.
- Chiang, C.K., Fincher Jr, C.R., Park, Y.W., Heeger, A.J., Shirakawa, H., Louis, E.J., Gau, S.C. and MacDiarmid, A.G., "Electrical Conductivity in Doped Polyacetylene," *Phys. Rev. Lett.*, **39** (1977) 1098-1101.
- Chiguvare, Z. and Dyakonov, V., "Trap-limited hole mobility in semiconducting poly (3-hexylthiophene)," *Physical Review B*, **70** (2004) 235207-235214.
- Chiguvare, Z. and Dyakonov, V., "Trap-limited hole mobility in semiconducting poly (3-hexylthiophene)," *Physical Review B*, **70** (2004) 235207-235214.
- Chiguvare, Z. and Parisi, J., "Current conduction in poly (3-hexylthiophene) and in poly (3-hexylthiophene) doped [6, 6]-phenyl c61-butyric acid methylester composite thin film devices," *Z. Naturforsch. A*, **67** (2012) 589-600.
- Cho, E., Risko, C., Kim, D., Gysel, R., Cates Miller, N., Breiby, D.W., McGehee, M.D., Toney, M.F., Kline, R.J. and Bredas, J.L., "Three-dimensional packing structure and electronic properties of biaxially oriented poly (2, 5-bis (3-alkylthiophene-2-yl) thieno [3, 2-b] thiophene) films," *Journal of the American Chemical Society*, **134** (2012) 6177-6190.
- Chou, C.H. and Chen, F.C., 2014. Plasmonic nanostructures for light trapping in organic photovoltaic devices. *Nanoscale*, **6** (15) 8444-8458.
- Christiansen, O., Hättig, C. and Jørgensen, P., "Ground and excited state polarizabilities and dipole transition properties of benzene from coupled cluster response theory," *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, **55** (1999) 509-524.
-

- Chu, P.H., Zhang, L., Colella, N.S., Fu, B., Park, J.O., Srinivasarao, M., Briseño, A.L. and Reichmanis, E., "Enhanced mobility and effective control of threshold voltage in P3HT-based field-effect transistors via inclusion of oligothiophenes," *ACS applied materials & interfaces*, **7** (2015) 6652-6660.
- Chung, M.T., Tsay, Z.E., Chi, M.H. and Wang, Y.W., "Effect of blending polymer insulators on the improvement of the performance of poly (3-hexylthiophene) transistors," *Thin Solid Films*, **638** (2017) 441-447.
- Clark, J., Silva, C., Friend, R.H. and Spano, F.C., "Role of intermolecular coupling in the photophysics of disordered organic semiconductors: aggregate emission in regioregular polythiophene," *Physical Review Letters*, **98** (2007) 206406-206410.
- Crowell, C.R. and Rideout, V.L., "Normalized thermionic-field (TF) emission in metal-semiconductor (Schottky) barriers," *Solid-State Electronics*, **12** (1969) 89-105.
- Danesh, C.D., Starkweather, N.S. and Zhang, S., "In situ study of dynamic conformational transitions of a water-soluble poly (3-hexylthiophene) derivative by surfactant complexation," *J. Phys. Chem.B*, **116** (2012) 12887-12894.
- Dazhi, W., Shulin, W., Jun, C., Suyuan, Z. and Fangqing, L., "Microstructure of SnO₂," *Physical Review B*, **49** (1994) 14282-14285.
- Dekker, C. and Ratner, M., "Electronic properties of DNA," *Phys. World*, **14** (2001) 29-33.
- Deng, L., Zhang, G., Kang, L., Lei, Z., Liu, C. and Liu, Z.H., "Graphene/VO₂ hybrid material for high performance electrochemical capacitor," *Electrochimica Acta*, **112** (2013) 448-457.
- Desarkar, H.S., Kumbhakar, P. and Mitra, A.K., "Optical properties of tin oxide nanoparticles prepared by laser ablation in water: Influence of laser ablation time duration and laser fluence," *Materials Characterization*, **73** (2012) 158-165.
- Di Maria, F., Zanelli, A., Liscio, A., Kovtun, A., Salatelli, E., Mazzaro, R., Morandi, V., Bergamini, G., Shaffer, A. and Rozen, S., "Poly (3-hexylthiophene) nanoparticles containing thiophene-s, s-dioxide: tuning of dimensions, optical and redox properties, and charge separation under illumination," *ACS nano*, **11**(2017) 1991-1999
- Dimitrakopoulos, C.D. and Malenfant, P.R., "Organic thin film transistors for large area electronics," *Advanced materials*, **14** (2002) 99-117.
- Dou, J.H., Zheng, Y.Q., Lei, T., Zhang, S.D., Wang, Z., Zhang, W.B., Wang, J.Y. and Pei, J., "Systematic Investigation of Side-Chain Branching Position Effect on Electron Carrier Mobility in Conjugated Polymers," *Advanced Functional Materials*, **24** (2014) 6270-6278.
- Drury, C. J., Mutsaers, C. M. J., Hart, C. M., Matters, M., and Leeuw, D. M. de, "Low- cost all-polymer integrated circuits," *Appl. Phys.Lett.*, **73** (1998) 108-110.

- Duong, D.T., Toney, M.F. and Salleo, A., "Role of confinement and aggregation in charge transport in semicrystalline polythiophene thin films," *Physical Review B*, **86** (2012) 205205-205209.
- E. H. Rhoderick, R. H. Williams, Metal-semiconductor contacts, 2nd ed., Clarendon Press; New York: Oxford University Press, Oxford [England], 1988.
- Epifani, M., Alvisi, M., Mirengi, L., Leo, G., Siciliano, P. and Vasanelli, L., "Sol-Gel Processing and Characterization of Pure and Metal-Doped SnO₂ Thin Films," *Journal of the American Ceramic Society*, **84** (2001) 48-54.
- Facchetti, A. and Marks, T., Transparent electronics: from synthesis to applications, John Wiley & Sons, 2010.
- Facchetti, A., "π-Conjugated polymers for organic electronics and photovoltaic cell applications," *Chemistry of Materials*, **23** (2010) 733-758.
- Facchetti, A., "π-Conjugated polymers for organic electronics and photovoltaic cell applications," *Chemistry of Materials*, **23** (2010) 733-758.
- Feng, Q., Li, X., Wang, J. and Gaskov, A.M., "Reduced graphene oxide (rGO) encapsulated Co₃O₄ composite nanofibers for highly selective ammonia sensors," *Sensors and Actuators B: Chemical*, **222** (2016) 864-870.
- Forrest, S.R., "The path to ubiquitous and low-cost organic electronic appliances on plastic," *Nature*, **428** (2004) 911.
- Forrest, S.R., "The road to high efficiency organic light emitting devices," *Organic Electronics*, **4** (2003) 45-48.
- Garnier, F., Hajlaoui, R., Yassar, A. and Srivastava, P., "All-Polymer Field-Effect Transistor Realized by Printing Techniques," *Science* **265** (1994) 1684-1686.
- Gaudiana, R. and Brabec, C., "Organic materials: Fantastic plastic," *Nature Photonics*, **2** (2008) 287.
- Ghosh, S., Maiyalagan, T. and Basu, R.N., "Nanostructured conducting polymers for energy applications: towards a sustainable platform," *Nanoscale*, **8** (2016) 6921-6947.
- Gierschner, J., Cornil, J. and Egelhaaf, H.J., "Optical bandgaps of π-conjugated organic materials at the polymer limit: experiment and theory," *Advanced materials*, **19** (2007) 173-191.
- Giese, B., Amaudrut, J., Köhler, A. K., Spormann, M. and Wessely, S., "Direct observation of hole transfer through DNA by hopping between adenine bases and by tunneling," *Nature*, **412** (2001) 318-320.

-
- Gordon, M.P., Lloyd, L.T. and Boucher, D.S., "Poly (3-hexylthiophene) films prepared using binary solvent mixtures," *Journal of Polymer Science Part B: Polymer Physics*, **54** (2016) 624-638.
- Gröschel, A.H., Schacher, F.H., Schmalz, H. and Borisov, O.V., "EB 60 Zhulina, A. Walther and AHE Mueller," *Nat Commun*, **3** (2012) 1-10.
- Guo, C., Cao, M. and Hu, C., "A novel and low-temperature hydrothermal synthesis of SnO₂ nanorods," *Inorganic Chemistry Communications*, **7** (2004) 929-931.
- Gupta, B. and Prakash, R., "Interfacial polymerization of polyanthranilic acid: morphology controlled synthesis," *Macromolecular Chemistry and Physics*, **213** (2012) 1457-1464.
- Gupta, B., Chauhan, D.S. and Prakash, R., "Controlled morphology of conducting polymers: Formation of nanorods and microspheres of polyindole," *Materials Chemistry and Physics*, **120** (2010) 625-630.
- Gupta, R. K., Yakuphanoglu, F., Hasar, H. and Al-Khedhairi, A. A., "p-Si/DNA photoconductive diode for optical sensor applications," *Synth. Met.*, **161** (2011) 2011-2016.
- Gurau, M.C., Delongchamp, D.M., Vogel, B.M., Lin, E.K., Fischer, D.A., Sambasivan, S. and Richter, L.J., "Measuring molecular order in poly (3-alkylthiophene) thin films with polarizing spectroscopies," *Langmuir*, **23** (2007) 834-842.
- Hamedi, M., Forchheimer, R. and Inganäs, O., "Towards woven logic from organic electronic fibres," *Nature materials*, **6**(2007) 357.
- Han, S., Jang, B., Kim, T., Oh, S.M. and Hyeon, T., "Simple synthesis of hollow tin dioxide microspheres and their application to lithium-ion battery anodes," *Advanced Functional Materials*, **15** (2005) 1845-1850.
- Han, S., Zhuang, X., Shi, W., Yang, X., Li, L. and Yu, J., "Poly (3-hexylthiophene)/polystyrene (P3HT/PS) blends based organic field-effect transistor ammonia gas sensor," *Sensors and Actuators B: Chemical*, **225**(2016)10-15.
- Han, S., Zhuang, X., Shi, W., Yang, X., Li, L. and Yu, J., "Poly (3-hexylthiophene)/polystyrene (P3HT/PS) blends based organic field-effect transistor ammonia gas sensor," *Sensors and Actuators B: Chemical*, **225**(2016) 10-15.
- Han, X., Jin, M., Xie, S., Kuang, Q., Jiang, Z., Jiang, Y., Xie, Z. and Zheng, L., "Synthesis of tin dioxide octahedral nanoparticles with exposed high-energy {221} facets and enhanced gas-sensing properties," *Angewandte Chemie International Edition*, **121** (2009) 9344-9347.
- Hancock, J.M., Gifford, A.P., Champion, R.D. and Jenekhe, S.A., "Block Co-oligomers for organic electronics and optoelectronics: synthesis, photophysics, electroluminescence, and field-effect charge transport of oligothiophene-b-oligoquinoline-b-oligothiophene triblock co-oligomers," *Macromolecules*, **41**(2008) 3588-3597.

- Harrison, P.G. and Willett, M.J., "The mechanism of operation of tin (IV) oxide carbon monoxide sensors," *Nature*, **332** (1988) 337–339.
- He, Y.S., Campbell, J.C., Murphy, R.C., Arendt, M.F. and Swinnea, J.S., "Electrical and optical characterization of Sb: SnO₂," *Journal of Materials Research*, **8** (1993) 3131–3134.
- Heeger, A. "The fourth generation of semiconducting and metallic polymers: Nobel Lecture: polymeric materials," *Reviews of Modern Physics*, **73** (2001) 681-700.
- Heeger, A.J., Parker, I.D. and Yang, Y., "Carrier injection into semiconducting polymers: Fowler-Nordheim field-emission tunneling," *Synthetic Metals*, **67** (1994) 23-29.
- Heo, M., Cho, H., Jung, J.W., Jeong, J.R., Park, S. and Kim, J.Y., "High-Performance Organic Optoelectronic Devices Enhanced by Surface Plasmon Resonance," *Advanced Materials*, **23** (2011) 5689-5693.
- Hiramoto, M., Kubo, M., Shinmura, Y., Ishiyama, N., Kaji, T., Sakai, K., Ohno, T. and Izaki, M., "Bandgap science for organic solar cells," **3** (2014) 351-380.
- Holliday, S., Donaghey, J.E. and McCulloch, I., "Advances in charge carrier mobilities of semiconducting polymers used in organic transistors," *Chemistry of Materials*, **26** (2013) 647-663.
- Hotta, S., "Electrochemical synthesis and spectroscopic study of poly (3-alkylthienylenes)," *Synthetic metals*, **22** (1987) 103-113.
- Hu, J.Q., Ma, X.L., Shang, N.G., Xie, Z.Y., Wong, N.B., Lee, C.S. and Lee, S.T., "Large-scale rapid oxidation synthesis of SnO₂ nanoribbons," *The Journal of Physical Chemistry B*, **106** (2002) 3823–3826.
- Hu, L., Yan, J., Liao, M., Wu, L. and Fang, X., "Ultrahigh external quantum efficiency from thin SnO₂ nanowire ultraviolet photodetectors," *small*, **7**(2011) 1012–1017.
- Hu, T., Sun, X., Sun, H., Yu, M., Lu, F., Liu, C. and Lian, J., "Flexible free-standing graphene–TiO₂ hybrid paper for use as lithium ion battery anode materials," *Carbon*, **51** (2013) 322-326.
- Hu, Z., Liu, J., Simón-Bower, L., Zhai, L. and Gesquiere, A.J., 2013. Influence of backbone rigidity on single chain conformation of thiophene-based conjugated polymers. *The Journal of Physical Chemistry B*, **117** (2013) 4461-4467.
- Hussain, A.A., Pal, A.R. and Patil, D.S., "High photosensitivity with enhanced photoelectrical contribution in hybrid nanocomposite flexible UV photodetector," *Organic Electronics*, **15** (2014) 2107-2115.
- Irimia-Vladu, M., "“Green” electronics: biodegradable and biocompatible materials and devices for sustainable future," *Chemical Society Reviews*, **43**(2014)588-610.

- Ivanović, M., Aygül, U., Dettinger, U., Tournebize, A., Polek, M., Batchelor, D., Mangold, S., Forster, M., Scherf, U., Peisert, H. and Chassé, T., “Electronic structure and self-organization properties of low band gap polymers: The effect of the introduction of additional thiophenemioieties,” *Solar Energy Materials and Solar Cells*, **157** (2016) 286-294.
- Jana, A., Scheer, E. and Polarz, S., “Synthesis of graphene–transition metal oxide hybrid nanoparticles and their application in various fields,” *Beilstein journal of nanotechnology*, **8** (2017) 688-714.
- Janasz, L., Luczak, A., Marszalek, T., Dupont, B.G., Jung, J., Ulanski, J. and Pisula, W., “Balanced ambipolar organic field-effect transistors by polymer preaggregation,” *ACS applied materials & interfaces*, **9** (2017) 20696-20703.
- Ji, E., Pellerin, V., Rubatat, L., Grelet, E., Bousquet, A. and Billon, L., “Self-assembly of ionizable “clicked” P3HT-b-PMMA copolymers: Ionic bonding group/counterion effects on morphology,” *Macromolecules*, **50** (2016) 235-243.
- Jiang, J.X., Trewin, A., Adams, D.J. and Cooper, A.I., “Band gap engineering in fluorescent conjugated microporous polymers,” *Chemical Science*, **2** (2011) 1777-1781.
- Jiang, R., Li, B., Fang, C. and Wang, J., “Metal/semiconductor hybrid nanostructures for plasmon-enhanced applications,” *Advanced materials*, **26** (2014) 5274-5309.
- Jimison, L.H., Salleo, A., Chabynyc, M.L., Bernstein, D.P. and Toney, M.F., “Correlating the microstructure of thin films of poly [5, 5-bis (3-dodecyl-2-thienyl)-2, 2-bithiophene] with charge transport: Effect of dielectric surface energy and thermal annealing,” *Physical Review B*, **78** (2008)125319.
- Joachim, C. and Ratner, M. A., “Molecular wires: guiding the super-exchange interactions between two electrodes,” *Nanotechnology*, **15** (2004) 1065.
- Johansson, T., Mammo, W., Svensson, M., Andersson, M.R. and Inganäs, O., “Electrochemical bandgaps of substituted polythiophenes,” *Journal of Materials Chemistry*, **13** (2003)1316-1323.
- Joshi, L., Singh, A.K. and Prakash, R., 2012. Polyindole/carboxylated-multiwall carbon nanotube composites produced by in-situ and interfacial polymerization. *Materials Chemistry and Physics*, **135** (2012) 80-85.
- Jung, H.J., Park, Y.J., Choi, S.H., Hong, J.M., Huh, J., Cho, J.H., Kim, J.H. and Park, C., “Thin film fabrication of PMMA/MEH-PPV immiscible blends by corona discharge coating and its application to polymer light emitting diodes,” *Langmuir*, **23**(2007)2184-2190.
- Kamloth, K. P., “Semiconductor Junction Gas Sensors,” *Chem. Rev.*, **108** (2008) 367-399.
- Kaneto, K., Hayashi, S., Ura, S. and Yoshino, K., “ESR and transport studies in electrochemically doped polythiophene film,” *Journal of the Physical Society of Japan*, **54** (1985)1146-1153.

- Kang, B., Park, N., Lee, J., Min, H., Choi, H.H., Lee, H.S. and Cho, K., "Surface-order mediated assembly of π -conjugated molecules on self-assembled monolayers with controlled grain structures," *Chemistry of Materials*, **27** (2015) 4669-4676.
- Kang, K., Watanabe, S., Broch, K., Sepe, A., Brown, A., Nasrallah, I., Nikolka, M., Fei, Z., Heeney, M., Matsumoto, D. and Marumoto, K., "2D coherent charge transport in highly ordered conducting polymers doped by solid state diffusion," *Nature materials*, **15** (2016) 896-902.
- Kang, S.J., Song, S., Liu, C., Kim, D.Y. and Noh, Y.Y., "Evolution in crystal structure and electrical performance of thiophene-based polymer field effect transistors: A remarkable difference between thermal and solvent vapor annealing," *Organic Electronics*, **15** (2014) 1972-1982.
- Kar, A., Kundu, S. and Patra, A., "Surface defect-related luminescence properties of SnO₂ nanorods and nanoparticles," *The Journal of Physical Chemistry C*, **115** (2011) 118-124.
- Karantantos, A., Clarke, N. and Kröger, M., "Modeling of polymer structure and conformations in polymer nanocomposites from atomistic to mesoscale: A Review," *Polymer Reviews*, **56** (2016) 385-428.
- Karim, M.R. and Yeum J.H., "In Situ Intercalative Polymerization of Conducting Polypyrrole/Montmorillonite Nanocomposites," *J. Poly. Sci. Part- B-Poly Phys.*, **46** (2008) 2279-2285.
- Kelley, T.W., Baude, P.F., Gerlach, C., Ender, D.E., Muyres, D., Haase, M.A., Vogel, D.E. and Theiss, S.D., "Recent progress in organic electronics: Materials, devices, and processes," *Chemistry of Materials*, **16**(2004)4413-4422.
- Khatir, N. M., Abdul-Malek, Z. and Banihashemian, S. M., "Influences of magnetic fields on current-voltage characteristics of gold-DNA-gold structure with variable gaps," *Mater. Sci. Semicond. Process.*, **36** (2015) 134-139.
- Kim, Y., Kim, H.J., Kim, J.S., Hayward, R.C. and Kim, B.J., "Architectural effects on solution self-assembly of poly (3-hexylthiophene)-based graft copolymers," *ACS applied materials & interfaces*, **9** (2017) 2933-2941.
- Kim, Y., Kim, S.J., Cho, S.P., Hong, B.H. and Jang, D.J., "High-performance ultraviolet photodetectors based on solution-grown ZnSnanobelts sandwiched between graphene layers," *Scientific reports*, **5** (2015) 12345.
- Kim, Y.J., Cho, C.H., Paek, K., Jo, M., Park, M.K., Lee, N.E., Kim, Y.J., Kim, B.J. and Lee, E., "Precise control of quantum dot location within the P3HT-b-P2VP/QD nanowires formed by crystallization-driven 1D growth of hybrid dimeric seeds," *J. Am. Chem. Soc.*, **136** (2014) 2767-2774.
- Kiryi, N., Jähne, E., Adler, H.J., Schneider, M., Kiriy, A., Gorodyska, G., Minko, S., Jehnichen, D., Simon, P., Fokin, A.A. and Stamm, M., "One-dimensional aggregation of regioregular polyalkylthiophenes," *Nano Lett.*, **3** (2003) 707-712.

-
- Kleine-Ostmann, T., Jördens, C., Baaske, K., Weimann, T., de Angelis, M. H. and Koch, M., "Conductivity of single-stranded and double-stranded deoxyribose nucleic acid under ambient conditions: The dominance of water," *Appl. Phys. Lett.*, **88** (2006) 102102-102104.
- Kleinhenz, N., Persson, N., Xue, Z., Chu, P.H., Wang, G., Yuan, Z., McBride, M.A., Choi, D., Grover, M.A. and Reichmanis, E., "Ordering of poly (3-hexylthiophene) in solutions and films: Effects of fiber length and grain boundaries on anisotropy and mobility," *Chemistry of Materials*, **28**(2016)3905-3913.
- Kleinhenz, N., Persson, N., Xue, Z., Chu, P.H., Wang, G., Yuan, Z., McBride, M.A., Choi, D., Grover, M.A. and Reichmanis, E., "Ordering of poly (3-hexylthiophene) in solutions and films: Effects of fiber length and grain boundaries on anisotropy and mobility," *Chemistry of Materials*, **28** (2016) 3905-3913.
- Kleinhenz, N., Persson, N., Xue, Z., Chu, P.H., Wang, G., Yuan, Z., McBride, M.A., Choi, D., Grover, M.A. and Reichmanis, E., "Ordering of poly (3-hexylthiophene) in solutions and films: Effects of fiber length and grain boundaries on anisotropy and mobility," *Chem. Materials*, **28** (2016) 3905-3913.
- Kline, R.J. and McGehee, M.D., "Morphology and charge transport in conjugated polymers," *Journal of Macromolecular Science Part C: Polymer Reviews*, **46** (2006) 27-45.
- Korol, R., Kilgour, M. and Segal, D., "Thermopower of molecular junctions: Tunneling to hopping crossover in DNA," *J. Chem. Phys.*, **145** (2016) 224702.
- Krishna, J.B.M., Saha, A., Okram, G.S., Purakayastha, S. and Ghosh, B., "Influence of traps on charge transport in metal ion doped polyaniline," *Journal of Physics D: Applied Physics*, **42** (2009) 115102.
- Kuila, A., Maity, N., Chatterjee, D.P. and Nandi, A.K., "pH and temperature responsiveness in AgNPs stabilized by a new poly (vinylidene fluoride) random graft copolymer," *Journal of Polymer Science Part A: Polymer Chemistry*, **55**(2017)960-970.
- Kumar, A. and Prakash, R., "Graphene sheets modified with polyindole for electro-chemical detection of dopamine," *Journal of nanoscience and nanotechnology*, **14** (2014) 2501-2506.
- Kumar, A., Takashima, W., Kaneto, K. and Prakash, R., "Nano-dimensional self assembly of regioregular poly (3-hexylthiophene) in toluene: Structural, optical, and morphological properties," *Journal of Applied Polymer Science*, **131** (2014) 40931-40939.
- Kumar, A., Takashima, W., Kaneto, K. and Prakash, R., "Nano-dimensional self assembly of regioregular poly (3-hexylthiophene) in toluene: Structural, optical, and morphological properties," *Journal of Applied Polymer Science* **131** (2014) 40931-40939.
- Kumar, A., Takashima, W., Kaneto, K. and Prakash, R., "Nano-dimensional selfassembly of regioregular poly (3-hexylthiophene) in toluene: Structural, optical, and morphological properties," *J. Appl. Polym. Sci.*, **131** (2014) 40931-40939.
-

- Kumar, C., Rawat, G., Kumar, H., Kumar, Y., Prakash, R. and Jit, S., "Electrical and ammonia gas sensing properties of poly (3, 3'-dialkylquaterthiophene) based organic thin film transistors fabricated by floating-film transfer method," *Organic Electronics*, **48**(2017)53-60.
- Kumar, R., Kushwaha, N. and Mittal, J., "Superior, rapid and reversible sensing activity of graphene-SnO hybrid film for low concentration of ammonia at room temperature," *Sensors and Actuators B: Chemical*, **244** (2017)243-251.
- Kushida, T., Nagase, T. and Naito, H., "Mobility enhancement in solution-processable organic transistors through polymer chain alignment by roll-transfer printing," *Organic Electronics*, **12** (2011) 2140-2143.
- Kushida, T., Nagase, T. and Naito, H., "Mobility enhancement in solution-processable organic transistors through polymer chain alignment by roll-transfer printing," *Organic Electronics*, **12** (2011) 2140-2143.
- Lee, K.S. and El-Sayed, M.A., "Gold and silver nanoparticles in sensing and imaging: sensitivity of plasmon response to size, shape, and metal composition," *The Journal of Physical Chemistry B*, **110** (2006)19220-19225.
- Lee, W.H., Cho, J.H. and Cho, K., "Control of mesoscale and nanoscale ordering of organic semiconductors at the gate dielectric/semiconductor interface for organic transistors," *Journal of Materials Chemistry*, **20** (2010) 2549-2561.
- Lei, Y., Deng, P., Lin, M., Zheng, X., Zhu, F. and Ong, B.S., "Enhancing Crystalline Structural Orders of Polymer Semiconductors for Efficient Charge Transport via Polymer-Matrix-Mediated Molecular Self-Assembly," *Advanced Materials*, **28** (2016) 6687-6694.
- Leite, E.R., Weber, I.T., Longo, E. and Varela, J.A., "A new method to control particle size and particle size distribution of SnO₂ nanoparticles for gas sensor applications," *Advanced Materials*, **12** (2000) 965-968.
- Lewis, F. D., Liu, J., Weigel, W., Rettig, W., Kurnikov, I. V. and Beratan, D. N., "Donorbridge-acceptor energetics determine the distance dependence of electron tunneling in DNA," *Proc. Natl. Acad. Sci.*, **99** (2002) 12536-12541.
- Li, L., Hu, Z., Yang, Y., Liang, P., Lu, A., Xu, H., Hu, Y. and Wu, H., "Hydrothermal self-assembly synthesis of Mn₃O₄/reduced graphene oxide hydrogel and its high electrochemical performance for supercapacitors," *Chinese Journal of Chemistry*, **31** (2013) 1290-1298.
- Li, L., Zhou, G., Weng, Z., Shan, X.Y., Li, F. and Cheng, H.M., "Monolithic Fe₂O₃/graphene hybrid for highly efficient lithium storage and arsenic removal," *Carbon*, **67** (2014) 500-507.
- Li, S., Xiao, Y., Wang, X. and Cao, M., "A ZnO-graphene hybrid with remarkably enhanced lithium storage capability," *Physical Chemistry Chemical Physics*, **16** (2014) 25846-25853.

-
- Li, X., Gao, C., Duan, H., Lu, B., Wang, Y., Chen, L., Zhang, Z., Pan, X. and Xie, E., "High-Performance Photoelectrochemical-Type Self-Powered UV Photodetector Using Epitaxial TiO₂/SnO₂ Branched Heterojunction Nanostructure," *Small*, **9** (2015) 2005–2011.
- Li, X., Wolanin, P.J., MacFarlane, L.R., Harniman, R.L., Qian, J., Gould, O.E., Dane, T.G., Rudin, J., Cryan, M.J., Schmaltz, T. and Frauenrath, H., "Uniform electroactive fibre-like micelle nanowires for organic electronics," *Nature communications*, **8** (2017)15909.
- Li, Y. and Qian, R., "Stability of conducting polymers from the electrochemical point of view," *Synthetic metals*, **53** (1983)149-154.
- Li, Y., Li, P. and Lu, Z.H., "Molecular Orientation and Energy Levels at Organic Interfaces," *Advanced Electronic Materials*, **2** (2016) 1600306-1600309.
- Lim, J. A., Liu, F., Ferdous, S., Muthukumar, M. and Briseno, A. L., "Polymer semiconductor crystals," *Materials Today*, **13** (2010) 14-24.
- Lim, J.A., Liu, F., Ferdous, S., Muthukumar, M. and Briseno, A.L., "Polymer semiconductor crystals," *Materials Today*, **13** (2010) 14-24.
- Lin, J.W.P. and Dudek, L.P., "Synthesis and properties of poly (2, 5-thienylene)," *Journal of Polymer Science: Polymer Chemistry Edition*, **18** (1980) 2869-2873.
- Ling, H., Liu, S., Zheng, Z. and Yan, F., "Organic flexible electronics," *Small Methods*, **2** (2018) 1800070.
- Link, S. and El-Sayed, M.A., "Spectral properties and relaxation dynamics of surface plasmon electronic oscillations in gold and silver nanodots and nanorods," *The Journal of Physical Chemistry B*, **103**(1999)8410-8426.
- Liu, J., Sun, Y., Gao, X., Xing, R., Zheng, L., Wu, S., Geng, Y. and Han, Y., "Oriented poly (3-hexylthiophene) Nanofibril with the π - π stacking growth direction by solvent directional evaporation," *Langmuir*, **27** (2011) 4212-4219.
- Liu, S., Yu, B., Zhang, H., Fei, T. and Zhang, T., "Enhancing NO₂ gas sensing performances at room temperature based on reduced graphene oxide-ZnO nanoparticles hybrids," *Sensors and Actuators B: Chemical*, **202** (2014)272-278.
- Liu, Y., Dong, J. and Liu, M., "Well-Aligned "Nano-Box-Beams" of SnO₂," *Advanced Materials*, **16** (2004) 353–356.
- Liu, Y., Liu, Y. and Zhan, X., "High-Mobility Conjugated Polymers Based on Fused-Thiophene Building Blocks," *Macromolecular Chemistry and Physics*, **212**(2011)428-443.
- Liu, Y., Zhao, J., Li, Z., Mu, C., Ma, W., Hu, H., Jiang, K., Lin, H., Ade, H. and Yan, H., "Aggregation and morphology control enables multiple cases of high-efficiency polymer solar cells," *Nature communications*, **5**(2014)5293.

- Liu, Z., Zhang, D., Han, S., Li, C., Tang, T., Jin, W., Liu, X., Lei, B. and Zhou, C., "Laser ablation synthesis and electron transport studies of tin oxide nanowires," *Advanced Materials*, **15**(2003) 1754–1757.
- Livshits, G.I., Stern, A., Rotem, D., Borovok, N., Eidelstein, G., Migliore, A., Penzo, E., Wind, S. J., Di Felice, R., Skourtis, S. S., Cuevas, J. C., Gurevich, L., Kotlyar, A. B. and Porath, D., "Long-range charge transport in single G-quadruplex DNA molecules," *Nat. nanotechnol.*, **9** (2014) 1040-1046.
- Lohwasser, R.H. and Thelakkat, M., "Toward perfect control of end groups and polydispersity in poly (3-hexylthiophene) via catalyst transfer polymerization. *Macromolecules*," *Macromolecules*, **44** (2011) 3388-3397.
- Louarn, G., Trznadel, M., Buisson, J.P., Laska, J., Pron, A., Lapkowski, M. and Lefrant, S., "Raman spectroscopic studies of regioregular poly (3-alkylthiophenes)," *J. Phys. Chem.*, **100** (1996) 12532-12539.
- Lu, G., Blakesley, J., Himmelberger, S., Pingel, P., Frisch, J., Lieberwirth, I., Salzmann, I., Oehzelt, M., Di Pietro, R., Salleo, A. and Koch, N., "Moderate doping leads to high performance of semiconductor/insulator polymer blend transistors," *Nature communications*, **4**(2013)1588.
- Lungenschmied, C., Dennler, G., Neugebauer, H., Sariciftci, S.N., Glatthaar, M., Meyer, T. and Meyer, A., "Flexible, long-lived, large-area, organic solar cells," *Solar Energy Materials and Solar Cells*, **91** (2007) 379-384.
- Luo, S., Fan, J., Liu, W., Zhang, M., Song, Z., Lin, C., Wu, X. and Chu, P.K., "Synthesis and low-temperature photoluminescence properties of SnO₂ nanowires and nanobelts," *Nanotechnology*, **17** (2006) 1695–1699.
- M. Brinkmann, P. Rannou, "Effect of molecular weight on the structure and morphology of oriented thin films of regioregular poly (3-hexylthiophene) grown by directional epitaxial solidification," *Adv. Func. Materials*, **17** (2007) 101-108.
- MacDiarmid, A. G., and Epstein, A. J., "In Conjugated Polymeric Materials: Opportunities in Electronics, Optical Electronics and Molecular Electronics," edited by J. L. Bredas and R. R. Chance (Kluwer Academic, Dordrecht) **1990**.
- Maillard, A. and Rochefort, A., "Structural and electronic properties of poly (3-hexylthiophene) π -stacked crystals," *Physical Review B*, **79**(2009)115207.
- Manga, K.K., Zhou, Y., Yan, Y. and Loh, K.P., "Multilayer hybrid films consisting of alternating graphene and titania nanosheets with ultrafast electron transfer and photoconversion properties," *Advanced Functional Materials*, **19** (2009) 3638-3643.
- Marcano, D.C., Kosynkin, D.V., Berlin, J.M., Sinitskii, A., Sun, Z., Slesarev, A., Alemany, L.B., Lu, W. and Tour, J.M., "Improved synthesis of graphene oxide," *ACS nano*, **4** (2010) 4806–4814.

-
- Martinez-Rubi, Y., Jakubek, Z.J., Jakubinek, M.B., Kim, K.S., Cheng, F., Couillard, M., Kingston, C. and Simard, B., "Self-assembly and visualization of poly (3-hexyl-thiophene) chain alignment along boron nitride nanotubes," *The Journal of Physical Chemistry C*, **119** (2015) 26605-26610.
- McCulloch, I., Heeney, M., Bailey, C., Genevicius, K., MacDonald, I., Shkunov, M., Sparrowe, D., Tierney, S., Wagner, R., Zhang, W. and Chabynyc, M.L., "Liquid-crystalline semiconducting polymers with high charge-carrier mobility," *Nat. Materials*, **5** (2006) 328-333.
- McNeill, R., Siudak, R., Wardlaw, J.H. and Weiss, D.E., "Electronic conduction in polymers. I. The chemical structure of polypyrrole," *Australian Journal of Chemistry*, **16**(1963)1056-1075.
- Mehta, S. K., Bhasin, K. K. and Kumar, A., "An insight into the micellization of dodecyltrimethylammonium bromide (DDAB) in the presence of bovine serum albumin (BSA)," *J. Colloid Interface Sci.*, **323** (2008) 426-434.
- Meng, D., Yang, S., Sun, D., Zeng, Y., Sun, J., Li, Y., Yan, S., Huang, Y., Bielawski, C.W. and Geng, J., "A dual-fluorescent composite of graphene oxide and poly (3-hexylthiophene) enables the ratiometric detection of amines," *Chemical Science*, **5** (2014) 3130-3134.
- Mishra, R., Mishra, S., Upadhyay, C. and Prakash, R., "DDAB-Triggered, Size-Sorted, Instant Phase-Switching of Silver Nanoparticles," *ChemistrySelect*, **2**(2017)3028-3034.
- Mitzi, D.B., Chondroudis, K. and Kagan, C.R., "Organic-inorganic electronics," *IBM journal of research and development*, **45**(2001)29-45.
- Mollinger, S.A., Krajina, B.A., Noriega, R., Salleo, A. and Spakowitz, A.J., "Percolation, tie-molecules, and the microstructural determinants of charge transport in semicrystalline conjugated polymers," *ACS Macro Letters*, **4** (2015) 708-712.
- Moore, W. J., *Seven Solid States: An Introduction to the Chemistry and Physics of Solids*, Benjamin, New York, 1967.
- Moores, A. and Goettmann, F., "The plasmon band in noble metal nanoparticles: an introduction to theory and applications," *New Journal of Chemistry*, **30**(2006)1121-1132.
- Mu, H., Zhang, Z., Zhao, X., Liu, F., Wang, K. and Xie, H., "High sensitive formaldehyde graphene gas sensor modified by atomic layer deposition zinc oxide films," *Applied Physics Letters*, **105** (2014)033107.
- Mu, H., Zhang, Z., Zhao, X., Liu, F., Wang, K. and Xie, H., "High sensitive formaldehyde graphene gas sensor modified by atomic layer deposition zinc oxide films" *Applied Physics Letters*, **105**(2014) 033107.
- Mueller, T., Xia, F. and Avouris, P., "Graphene photodetectors for high-speed optical communications," *Nature photonics*, **4** (2010) 297-301.

-
- Na, J.Y., Kim, M. and Park, Y.D., "Solution processing with a good solvent additive for highly reliable organic thin-film transistors," *The Journal of Physical Chemistry C*, **121**(2017)13930-13937.
- Nagamatsu, S., Takashima, W., Kaneto, K., Yoshida, Y., Tanigaki, N., Yase, K. and Omote, K., "Backbone arrangement in "friction-transferred" regioregular poly (3-alkylthiophene)s," *Macromolecules*, **36** (2003) 5252-5257.
- Nagamatsu, S., Takashima, W., Kaneto, K., Yoshida, Y., Tanigaki, N., Yase, K. and Omote, K., "Backbone arrangement in "friction-transferred" regioregular poly (3-alkylthiophene)s," *Macromolecules*, **36**(2003)5252-5257.
- Nakanishi, N., Tada, K., Onoda, M. and Nakayama, H., "Electronic states at conducting polymer/conducting oxide interfaces observed using a low-energy photoelectron spectroscopic method," *Appl. Phys. Lett.*, **75** (1999) 226-228.
- Nawaz, A., Kumar, A. and Hümmelgen, I.A., "Ultra-high mobility in defect-free poly (3-hexylthiophene-2, 5-diyl) field-effect transistors through supra-molecular alignment," *Organic Electronics*, **51** (2017) 94-102.
- Nethravathi, C., Viswanath, B., Michael, J. and Rajamath, M., "Hydrothermal synthesis of a monoclinic VO₂ nanotube-graphene hybrid for use as cathode material in lithium ion batteries," *Carbon*, **50** (2012) 4839-4846.
- Newbloom, G.M., de la Iglesia, P. and Pozzo, L.D., "Controlled gelation of poly (3-alkylthiophene)s in bulk and in thin-films using low volatility solvent/poor-solvent mixtures," *Soft Matter*, **10** (2014) 8945-8954.
- Newbloom, G.M., Kim, F.S., Jenekhe, S.A. and Pozzo, D.C., "Mesoscale morphology and charge transport in colloidal networks of poly (3-hexylthiophene)," *Macromolecules*, **44** (2011) 3801-3809.
- Nigrey, P. J., MacDiarmid A. G. and Heeger A. J., "Electrochemistry of Polyacetylene, (CH)_x: Electrochemical Doping of (CH)_x Films to the Metallic State," *Chem. Comm.*, **96** (1979) 594-595.
- Nikitenko, V.R., Heil, H. and Von Seggern, H., "Space-charge limited current in regioregular poly-3-hexyl-thiophene," *J. Appl. Phys.*, **94** (2003) 2480-2485.
- Nikitenko, V.R., Heil, H. and Von Seggern, H., "Space-charge limited current in regioregular poly-3-hexyl-thiophene," *Journal of applied physics*, **94** (2003) 2480-2485.
- Noguez, C. "Surface plasmons on metal nanoparticles: the influence of shape and physical environment." *The Journal of Physical Chemistry C*, **111**(2007)3806-3819.
- Noriega, R., Rivnay, J., Vandewal, K., Koch, F.P., Stingelin, N., Smith, P., Toney, M.F. and Salleo, A., "A general relationship between disorder, aggregation and charge transport in conjugated polymers," *Nature materials*, **12** (2013) 1038.

-
- Northrup, J.E., "Atomic and electronic structure of polymer organic semiconductors: P3HT, PQT, and PBTtT," *Physical Review B*, **76** (2007) 245202.
- Omnès, F., Monroy, E., Muñoz, E. and Reverchon, J.L., "Wide bandgap UV photodetectors: A short review of devices and applications. In *Gallium Nitride Materials and Devices II* (Vol. 6473, p. 64730E)," *International Society for Optics and Photonics*, **6473** (2007) 64730E–64730E–15.
- Ong, B.S., Wu, Y., Liu, P. and Gardner, S., "High-performance semiconducting polythiophenes for organic thin-film transistors," *Journal of the American Chemical Society*, **126** (2004)3378-3379.
- Ong, B.S., Wu, Y., Liu, P. and Gardner, S., "High-performance semiconducting polythiophenes for organic thin-film transistors," *Journal of the American Chemical Society*, **126** (2004) 3378-3379.
- Ong, B.S., Wu, Y., Liu, P. and Gardner, S., "Structurally ordered polythiophene nanoparticles for high-performance organic thin-film transistors," *Advanced Materials*, **17** (2005) 1141-1144.
- Ong, B.S., Wu, Y., Liu, P. and Gardner, S., "Structurally ordered polythiophene nanoparticles for high-performance organic thin-film transistors," *Advanced Materials*, **17**(2005)1141-1144.
- Otto, A., "The 'chemical' (electronic) contribution to surface-enhanced Raman scattering." *Journal of Raman Spectroscopy: An International Journal for Original Work in all Aspects of Raman Spectroscopy, Including Higher Order Processes, and also Brillouin and Rayleigh Scattering*, **36** (2005)497-509.
- Padovani, F.A. and Stratton, R., "Field and thermionic-field emission in Schottky barriers," *Solid-State Electronics*, **9** (1966) 695-707.
- Pandey, M., "Controlling the Orientation of Semiconducting Polymers in Floating Film for Anisotropic Charge Transport in Organic Field Effect Transistor," Ph.D. Thesis, Kyushu Institute of Technology, Fukuoka, JAPAN, 2017.
- Pandey, M., Nagamatsu, S., Takashima, W., Pandey, S.S. and Hayase, S., "Interplay of orientation and blending: Synergistic enhancement of field effect mobility in thiophene-based conjugated polymers," *The Journal of Physical Chemistry C*, **121** (2017) 11184-11193.
- Pandey, M., Pandey, S.S., Nagamatsu, S., Hayase, S. and Takashima, W. "Solvent driven performance in thin floating-films of PBTtT for organic field effect transistor: role of macroscopic orientation" *Organic Electronics*, **43** (2017) 240-246.
- Pandey, R. K., "Self-assembly of poly (3, 3''-dialkylquaterthiophene) through facile techniques and its device application," Ph.D. Thesis, Indian Institute of Technology (BHU), Varanasi, UP, INDIA, 2014.
- Pandey, R.K., Mishra, R., Tiwari, P. and Prakash, R., "Interface engineering for enhancement in performance of organic/inorganic hybrid heterojunction diode," *Organic Electronics*, **45** (2017) 26-32.
-

- Pandey, R.K., Singh, A.K. and Prakash, R., "Directed self-assembly of poly (3, 3''-dialkylquaterthiophene) polymer thin film: effect of annealing temperature," *The Journal of Physical Chemistry C*, **118** (2014) 22943-22951.
- Pandey, R.K., Singh, A.K., Upadhyay, C. and Prakash, R., "Molecular self ordering and charge transport in layer by layer deposited poly (3, 3''-dialkylquaterthiophene) films formed by Langmuir-Schaefer technique," *Journal of Applied Physics*, **116** (2014) 094311-094318.
- Pandey, R.K., Takashima, W., Nagamatsu, S., Dauendorffer, A., Kaneto, K. and Prakash, R., "Macroscopic self-ordering of solution processible poly (3, 3''-dialkylquaterthiophene) by floating film transfer method," *Journal of Applied Physics*, **114** (2013) 054309-054316.
- Pandey, R.K., Upadhyay, C. and Prakash, R., "Pressure dependent surface morphology and Raman studies of semicrystalline poly (indole-5-carboxylic acid) by the Langmuir–Blodgett technique," *RSC Advances*, **3** (2013) 15712-15718.
- Pandey, R.K., Yadav, S.K., Upadhyay, C., Prakash, R. and Mishra, H., Surface plasmon coupled metal enhanced spectral and charge transport properties of poly (3, 3''-dialkylquaterthiophene) Langmuir Schaefer films," *Nanoscale*, **7** (2015) 6083-6092.
- Pang, G., Chen, S., Kolytyn, Y., Zaban, A., Feng, S. and Gedanken, A., "Controlling the particle size of calcined SnO₂ nanocrystals," *Nano Letters*, **1** (2001) 723–726.
- Park, S.K., Dhakal, K.P., Kim, J., Kim, J.H. and Rho, H., "Fabrication and optical characterization of electrospun poly (3-buthylthiophene) nanofibers," *Synthetic Metals*, **161** (2011) 1088-1091.
- Park, S.K., Jin, A., Yu, S.H., Ha, J., Jang, B., Bong, S., Woo, S., Sung, Y.E. and Piao, Y., "In situ hydrothermal synthesis of Mn₃O₄ nanoparticles on nitrogen-doped graphene as high-performance anode materials for lithium ion batteries," *Electrochimica Acta*, **120** (2014) 452-459.
- Pasveer, W.F., Cottaar, J., Tanase, C., Coehoorn, R., Bobbert, P.A., Blom, P.W.M., De Leeuw, D.M. and Michels, M.A.J., "Unified description of charge-carrier mobilities in disordered semiconducting polymers," *Physical Review Letters*, **94** (2005) 206601–206604.
- Pasveer, W.F., Cottaar, J., Tanase, C., Coehoorn, R., Bobbert, P.A., Blom, P.W.M., De Leeuw, D.M. and Michels, M.A.J., "Unified description of charge-carrier mobilities in disordered semiconducting polymers," *Physical review letters* **94** (2005) 206601-206604.
- Periasamy, V., Rizan, N., Al-Ta'ii, H. M. J., Tan, Y. S., Tajuddin, H. A. and Iwamoto, M., "Measuring the electronic properties of DNA-Specific schottky diodes towards detecting and identifying basidiomycetes DNA," *Sci. Rep.*, **6** (2016) 29879-29888.
- Persson, N.E., Rafshoon, J., Naghshpour, K., Fast, T., Chu, P.H., McBride, M., Risteen, B., Grover, M. and Reichmanis, E., "High-throughput image analysis of fibrillar materials: a case study on polymer nanofiber packing, alignment, and defects in organic field effect transistors," *ACS applied materials & interfaces*, **9**(2017)36090-36102.

-
- Pippenger, P.M., Averitt, R.D., Papanyan, V.O., Nordlander, P. and Halas, N.J., "Excimer model for photoluminescence in single-crystal C60," *The Journal of Physical Chemistry*, **100** (1996) 2854-2861.
- Porath, D., Bezryadin, A., Vries, S. De. and Dekker, C., "Direct measurement of electrical transport through DNA molecules," *Nature*, **403** (2000) 635-638.
- Porrazzo, R., Bellani, S., Luzio, A., Bertarelli, C., Lanzani, G., Caironi, M. and Antognazza, M.R., "Field-effect and capacitive properties of water-gated transistors based on polythiophene derivatives," *APL Materials*, **3** (2015) 014905–014912.
- Porrazzo, R., Bellani, S., Luzio, A., Bertarelli, C., Lanzani, G., Caironi, M. and Antognazza, M.R., "Field-effect and capacitive properties of water-gated transistors based on polythiophene derivatives," *APL Materials*, **3** (2015) 014905-014912.
- Qian, J., Liu, L., Xu, B. and Tian, W., "A theoretical study on the charge transport properties of DNA," *Org. Electron.*, **42** (2017) 244-255.
- R. Schmechel, H. V. Seggern, Electronic traps in organic transport layers, *Phys. Status Solidi A*, **201**, 1215-1235, 2004.
- Raghubanshi, H., Ngobeni, S.M., Osikoya, A.O., Shooto, N.D., Dikio, C.W., Naidoo, E.B., Dikio, E.D., Pandey, R.K. and Prakash, R., "Synthesis of graphene oxide and its application for the adsorption of Pb²⁺ from aqueous solution," *Journal of industrial and engineering chemistry*, **47** (2017) 169-178.
- Rakitin, A., Aich, P., Papadopoulos, C., Kobzar, Y., Vedeneev, A. S., Lee, J. S. and Xu, J. M., "Metallic conduction through engineered DNA: DNA nanoelectronic building blocks," *Phys. Rev. Lett.*, **86** (2001) 3670.
- Rawtani, D., Kuntmal, B. and Agrawal, Y., "Charge transfer in DNA and its diverse modeling Approaches," *Front. Life Sci.*, **9** (2016) 214-225.
- Rittman, M., Hoffmann, S. V., Gilroy, E., Hicks, M. R., Finkenstadt, B. and Rodger, A., "Probing the structure of long DNA molecules in solution using synchrotron radiation linear Dichroism," *Phys. Chem. Chem. Phys.*, **14** (2012) 353-366.
- Rose, A., "Space-charge-limited currents in solids," *Physical Review B*, **97** (1955) 1538-1544.
- Rose, A., "Space-charge-limited currents in solids," *Physical Review*, **97** (1955) 1538-1544.
- S. M. Sze, *Physics of Semiconductor Devices*, 2nd ed. Wiley, New York, 1981.
- Sahu, P.K., Pandey, M., Kumar, C., Pandey, S.S., Takashima, W., Mishra, V.N. and Prakash, R., "Air-stable vapor phase sensing of ammonia in sub-threshold regime of poly (2, 5-bis (3-tetradecylthiophen-2yl) thieno (3, 2-b) thiophene) based polymer thin-film transistor," *Sensors and Actuators B: Chemical*, **246**(2017)243-251.

- Salaneck W. R., Friend R. H. and Bredas J. L., "Electronic structure of conjugated polymers: consequences of electron-lattice coupling" *Phys. Rept.* **319** (1999) 231-251.
- Salleo, A., "Charge transport in polymeric transistors," *Materials Today*, **10** (2007) 38–45.
- Samitsu, S., Shimomura, T., Heike, S., Hashizume, T. and Ito, K., "Effective production of poly (3-alkylthiophene) nanofibers by means of whisker method using anisole solvent: structural, optical, and electrical properties," *Macromolecules*, **41** (2008) 8000-8010.
- Sang, L., Liao, M. and Sumiya, M., "A comprehensive review of semiconductor ultraviolet photodetectors: from thin film to one-dimensional nanostructures," *Sensors*, **13** (2013) 10482–10518.
- Sardar, R., Funston, A.M., Mulvaney, P. and Murray, R.W., "Gold nanoparticles: past, present, and future," *Langmuir*, **25**(2009)13840-13851.
- Scharsich, C., Lohwasser, R.H., Sommer, M., Asawapirom, U., Scherf, U., Thelakkat, M., Neher, D. and Köhler, A., "Control of aggregate formation in poly (3-hexylthiophene) by solvent, molecular weight, and synthetic method," *J. Polym. Sci. Part B Polym. Phys.*, **50** (2012) 442-453.
- Scholes, D.T., Yee, P.Y., Lindemuth, J.R., Kang, H., Onorato, J., Ghosh, R., Luscombe, C.K., Spano, F.C., Tolbert, S.H. and Schwartz, B.J., "The Effects of Crystallinity on Charge Transport and the Structure of Sequentially Processed F4TCNQ-Doped Conjugated Polymer Films," *Advanced Functional Materials*, **27**(2017)1702654.
- Sekitani, T. and Someya, T., "Stretchable, large-area organic electronics," *Advanced Materials*, **22**(2010)2228-2246.
- Semancik, S. and Fryberger, T.B., "Model studies of SnO₂-based gas sensors: vacancy defects and Pd additive effects," *Sensors and Actuators B: Chemical*, **1** (1990) 97–102.
- Serrano, W., Meléndez, A., Ramos, I. and Pinto, N.J., "Poly (lactic acid)/poly (3-hexylthiophene) composite nanofiber fabrication for electronic applications," *Polymer International*, **65** (2016) 503-507.
- Shao, D., Yu, M., Sun, H., Hu, T. and Sawyer, S., "High responsivity, fast ultraviolet photodetector fabricated from ZnO nanoparticle–graphene core–shell structures," *Nanoscale*, **5**(2013) 3664-3667.
- Sharma, B.K. and Khare, N., "Effect of UV exposure on rectifying behavior of polyaniline/ZnO heterojunction," *Semiconductor Science and Technology*, **28** (2013) 125022-125027.
- Sharma, B.K. and Khare, N., "Stress-dependent band gap shift and quenching of defects in Al-doped ZnO films," *Journal of Physics D: Applied Physics*, **43** (2010) 465402-465407.
- Shi, W., Ye, J., Checkelsky, J.G., Terakura, C. and Iwasa, Y., "Transport properties of polymer semiconductor controlled by ionic liquid as a gate dielectric and a pressure medium," *Adv. Func. Materials*, **24** (2014) 2005-2012.

- Shi, W., Yu, X., Zheng, Y. and Yu, J., "DNA based chemical sensor for the detection of nitrogen dioxide enabled by organic field-effect transistor," *Sens. Actuators, B*, **222** (2006)1003-1011.
- Shirakawa, H., Louis, E.J., MacDiarmid, A.G., Chiang, C.K. and Heeger, A.J., "Synthesis of electrically conducting organic polymers: halogen derivatives of polyacetylene,(CH)_x," *Journal of the Chemical Society, Chemical Communications*, **16**(1977)578-580.
- Siddiqui, S. and Spano, F.C., "H-and J-aggregates of conjugated polymers and oligomers: A theoretical investigation," *Chemical physics letters*, **308**(1999)99-105..
- Singh, A. K., "Studies of Conducting polymers and their Nanocomposites for Schottky Devices," Ph.D. Thesis, Institute of Technology (Banaras Hindu University), Varanasi, UP, INDIA, 2010.
- Singh, A.K. and Prakash, R., "Organic Schottky diode based on conducting polymer–nanoclay composite," *RSC Advances*, **2**(2012)5277-5283.
- Singh, A.K., Andleeb, S., Singh, J. and Eom, J., "Tailoring the electrical properties of multilayer MoS₂ transistors using ultraviolet light irradiation," *RSC Advances*, **5** (2015) 77014-77018.
- Singh, A.K., Joshi, L., Gupta, B., Kumar, A. and Prakash, R., "Electronic properties of soluble functionalized polyaniline (polyanthranilic acid)-multiwalled carbon nanotube nanocomposites: influence of synthesis methods," *Synthetic Metals*, **161** (2010) 481-488.
- Singh, G., Choudhary, A., Haranath, D., Joshi, A.G., Singh, N., Singh, S. and Pasricha, R., "ZnO decorated luminescent graphene as a potential gas sensor at room temperature," *Carbon*, **50** (2012) 385-394.
- Singh, M.K., Kumar, A. and Prakash, R., "Self-assembly of regioregular poly [2, 5-bis (3-tetradecylthiophen-2-yl) thieno [3, 2-b] thiophene], pBTTT-C14 in solvent-mixture and study of its junction behavior," *Organic Electronics*, **50** (2017)138-146.
- Singh, M.K., Kumar, A. and Prakash, R., "Self-assembly of regioregular poly (3, 3'-didodecylquarterthiophene) in chloroform and study of its junction properties," *Materials Science and Engineering B*, **217** (2017) 12-17.
- Singh, R., Kashayap, S., Singh, V., Kayastha, A. M., Mishra, H., Saxena, P. S., Srivastava, A. and Singh, R. K., "QPRtase modified N-doped carbon quantum dots: A fluorescent bioprobe for selective detection of neurotoxin quinolinic acid in human serum," *Biosensors & Bioelectronics*, **101** (2018) 103-109.
- Sirringhaus, H., Tessler, N. and Friend, R. H., "Integrated Optoelectronic Devices Based on Conjugated Polymers," *Science*, **280** (1998) 1741–1744.
- Sirringhaus, H., Wilson, R.J., Friend, R.H., Inbasekaran, M., Wu, W., Woo, E.P., Grell, M. and Bradley, D.D.C., "Mobility enhancement in conjugated polymer field-effect transistors through chain alignment in a liquid-crystalline phase," *Applied Physics Letters*, **77**(2000) 406-408.

- Skotheim T. A., Elsenbaumer R. L. and Reynolds J. R., Hand book of Conducting Polymers (2nd Edt) Publ. Marcel Dekker, New York 1998.
- Skotheim, T.A. and Reynolds, J. R., “Handbook of Conducting Polymers Conjugated Polymers theory, Synthesis, Properties and Characterizations,” Third Edn. Taylor & Francis Group, 2007.
- Smith, Z.C., Wright, Z.M., Arnold, A.M., Sauv e, G., McCullough, R.D. and Sydlik, S.A., Increased Toughness and Excellent Electronic Properties in Regioregular Random Copolymers of 3-Alkylthiophenes and Thiophene,” *Advanced Electronic Materials*, **3**(2017)1600316.
- S omiya, S. and Roy, R., “Hydrothermal synthesis of fine oxide powders,” *Bulletin of Materials Science*, **23**(2000) 453–460.
- Son, D.I., Kwon, B.W., Park, D.H., Seo, W.S., Yi, Y., Angadi, B., Lee, C.L. and Choi, W.K., “Emissive ZnO–graphene quantum dots for white-light-emitting diodes,” *Nature nanotechnology*, **7**(2012) 465.
- Spano, F.C. and Silva, C., 2014 “H-and J-aggregate behavior in polymeric semiconductors,” *Annual review of physical chemistry*, **65**(2014)477-500.
- Spano, F.C., “Modeling disorder in polymer aggregates: The optical spectroscopy of regioregular poly (3-hexylthiophene) thin films,” *J. Chem. Phys.*, **122** (2005) 234701-234715.
- Spano, F.C., “Modeling disorder in polymer aggregates: The optical spectroscopy of regioregular poly (3-hexylthiophene) thin films,” *The Journal of chemical physics*, **122** (2005) 234701-234715.
- Spano, F.C., “The spectral signatures of Frenkel polarons in H-and J-aggregates,” *Acc. Chem. Res.*, **43** (2010) 429-439.
- Srivastava, V. and Jain, K., “At room temperature graphene/SnO₂ is better than MWCNT/SnO₂ as NO₂ gas sensor,” *Materials Letters*, **169** (2016) 28-32.
- Steyrleuthner, R., Di Pietro, R., Collins, B.A., Polzer, F., Himmelberger, S., Schubert, M., Chen, Z., Zhang, S., Salleo, A., Ade, H. and Facchetti, A., “The role of regioregularity, crystallinity, and chain orientation on electron transport in a high-mobility n-type copolymer,” *Journal of the American Chemical Society*, **136**(2014)4245-4256.
- Streetman, B.G. and Banerjee, S., *Solid state electronic devices* (Vol. 4), Englewood Cliffs, NJ: Prentice hall,1995.
- Su, W. P., Schrieffer J. R. and Heeger A. J., “Solitons in polyacetylene,” *Physical Review Letters*, **42** (1979)1698-1691.
- Sumathi, C., Muthukumar, P., Thivya, P., Wilson, J. and Ravi, G., “DNA mediated electrocatalytic enhancement of α -Fe₂O₃–PEDOT–C–MoS₂ hybrid nanostructures for riboflavin detection on screen printed electrode,” *RSC Adv.*, **6** (2016) 81500-81509.

-
- Sun, J., Jung, B.J., Lee, T., Berger, L., Huang, J., Liu, Y., Reich, D.H. and Katz, H.E., "Tunability of Mobility and Conductivity over Large Ranges in Poly (3, 3''-didodecylquaterthiophene)/Insulating Polymer Composites," *ACS applied materials & interfaces*, **1**(2009) 412-419.
- Sun, L., Zhao, Z., Zhou, Y. and Liu, L., "Anatase TiO₂ nanocrystals with exposed {001} facets on graphene sheets via molecular grafting for enhanced photocatalytic activity," *Nanoscale*, **4**(2012)613-620.
- Sun, S., Salim, T., Wong, L.H., Foo, Y.L., Boey, F. and Lam, Y.M., "A new insight into controlling poly (3-hexylthiophene) nanofiber growth through a mixed-solvent approach for organic photovoltaics applications," *J. Materials Chem.*, **21** (2011) 377-386.
- Sun, Y., Liu, Y. and Zhu, D., "Advances in organic field-effect transistors," *Journal of materials Chemistry*, **15**(2005)53-65.
- Sun, Y., Xiao, G., Lin, Y., Su, Z. and Wang, Q., "Self-assembly of large-scale P3HT patterns by confined evaporation in the capillary tube," *RSC Advances*, **5** (2015) 20491-20497.
- Sundberg, M., Inganäs, O., Stafström, S., Gustafsson, G. and Sjögren, B., "Optical absorption of poly (3-alkylthiophenes) at low temperatures," *Solid State Communications*, **71** (1989) 435.
- Surin, M., "From nucleobase to DNA templates for precision supramolecular assemblies and synthetic polymers," *Polym. Chem.*, **7** (2016) 4137-4150.
- Talebian, N. and Jafarinezhad, F., "Morphology-controlled synthesis of SnO₂ nanostructures using hydrothermal method and their photocatalytic applications," *Ceramics International*, **39** (2013) 8311–8317.
- Tan, B., Li, Y., Palacios, M.F., Therrien, J. and Sobkowicz, M.J., "Effect of surfactant conjugation on structure and properties of poly (3-hexylthiophene) colloids and field effect transistors," *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **488**(2016)7-14.
- Taniguchi, M. and Kawai, T., "DNA electronics," *Physica E.*, **33** (2006) 1-12.
- Tatsuyama, C. and Ichimura, S., "Electrical and optical properties of GaSe-SnO₂ heterojunctions," *Japanese Journal of Applied Physics*, **15** (1976) 843–847.
- Teran, N.B., He, G.S., Baev, A., Shi, Y., Swihart, M.T., Prasad, P.N., Marks, T.J. and Reynolds, J.R., "Twisted thiophene-based chromophores with enhanced intramolecular charge transfer for cooperative amplification of third-order optical nonlinearity," *Journal of the American Chemical Society*, **138** (2016) 6975-6984.
- Thankaraj Salammal, S., Structural and morphological investigations of Poly (3-alkylthiophene) thin films prepared by low and room temperature casting and spin coating techniques, Ph.D Dissertation, 2012.

- Tiwari, S., "Fabrication and characterization of poly-3-hexylthiophene based field effect transistors: Performance improvement by morphology and doping control," Ph.D. Thesis, Indian Institute of Technology (BHU), Varanasi, UP, INDIA, 2015.
- Tiwari, S., Takashima, W., Balasubramanian, S.K., Miyajima, S., Nagamatsu, S., Pandey, S.S. and Prakash, R., "P3HT-fiber-based field-effect transistor: Effects of nanostructure and annealing temperature," *Japanese Journal of Applied Physics*, **53** (2014) 021601-021607.
- Tomlinson, E.P., Hay, M.E. and Boudouris, B.W., "Radical polymers and their application to organic electronic devices," *Macromolecules*, **47**(2014) 6145-6158.
- Tomozawa, H., Braun, D., Phillips, S. and Heeger, A.J. and Kroemer, H. "Metal-polymer Schottky barriers on cast films of soluble poly(3-alkylthiophenes)," *Synthetic Metals*, **22** (1987)63-69.
- Tomozawa, H., Braun, D., Phillips, S.D., Worland, R., Heeger, A.J. and Kroemer, H., "Metal-polymer Schottky barriers on processible polymers," *Synthetic Metals*, **28** (1989) 687-690.
- Tomozawa, H., Braun, D., Phillips, S.D., Worland, R., Heeger, A.J. and Kroemer, H., "Metal-polymer Schottky barriers on processible polymers," *Synth. Met.*, **28** (1989) C687-C690.
- Traiphol, R., Charoenthai, N., Sriksirin, T., Kerdcharoen, T., Osotchan, T. and Maturos, T., "Chain organization and photophysics of conjugated polymer in poor solvents: aggregates, agglomerates and collapsed coils," *Polymer*, **48** (2007) 813-826.
- Tremel, K. and Ludwigs, S., "Morphology of P3HT in thin films in relation to optical and electrical properties," In *P3HT Revisited—From Molecular Scale to Solar Cell Devices*. Springer, Berlin, Heidelberg. **265** (2014) 39-82.
- Trentler, T.J., Hickman, K.M., Goel, S.C., Viano, A.M., Gibbons, P.C. and Buhro, W.E., "Solution-liquid-solid growth of crystalline III-V semiconductors: an analogy to vapor-liquid-solid growth," *Science*, **270**(1995) 1791–1794.
- Tu, W., Zhou, Y., Liu, Q., Yan, S., Bao, S., Wang, X., Xiao, M. and Zou, Z., "An In Situ Simultaneous Reduction-Hydrolysis Technique for Fabrication of TiO₂-Graphene 2D Sandwich-Like Hybrid Nanosheets: Graphene-Promoted Selectivity of Photocatalytic-Driven Hydrogenation and Coupling of CO₂ into Methane and Ethane," *Advanced Functional Materials*, **23**(2013)1743-1749.
- Uddin, M.E., Kim, N.H., Kuila, T., Lee, S.H., Hui, D. and Lee, J.H., "Preparation of reduced graphene oxide-NiFe₂O₄ nanocomposites for the electrocatalytic oxidation of hydrazine," *Composites Part B: Engineering*, **79** (2015) 649-659.
- Van Mullekom, H.A.M., Vekemans, J.A.J.M., Havinga, E.E. and Meijer, E.W., "Developments in the chemistry and band gap engineering of donor–acceptor substituted conjugated polymers," *Materials Science and Engineering: R: Reports*, **32**(2001)1-40.

- Vuong, D.D., Hien, V.X., Trung, K.Q. and Chien, N.D., "Synthesis of SnO₂ micro-spheres, nano-rods and nano-flowers via simple hydrothermal route," *Physica E: Low-dimensional Systems and Nanostructures*, **44** (2011) 345–349.
- Walker, A.B., Kambili, A. and Martin, S.J., "Electrical transport modelling in organic electroluminescent devices," *Journal of physics: condensed matter*, **14** (2002) 9825.
- Walters, G. and Parkin, I.P., "The incorporation of noble metal nanoparticles into host matrix thin films: synthesis, characterisation and applications," *Journal of Materials Chemistry*, **19**(2009)574-590.
- Wang, C., Dong, H., Hu, W., Liu, Y. and Zhu, D., "Semiconducting π -conjugated systems in field-effect transistors: A material odyssey of organic electronics," *Chemical Reviews*, **112** (2012) 2208–2267.
- Wang, D., Choi, D., Li, J., Yang, Z., Nie, Z., Kou, R., Hu, D., Wang, C., Saraf, L.V., Zhang, J. and Aksay, I.A., "Self-assembled TiO₂–graphene hybrid nanostructures for enhanced Li-ion insertion," *ACS nano*, **3**(2009)907-914.
- Wang, H., Liang, J., Fan, H., Xi, B., Zhang, M., Xiong, S., Zhu, Y. and Qian, Y., "Synthesis and gas sensitivities of SnO₂ nanorods and hollow microspheres," *Journal of Solid State Chemistry*, **181** (2008) 122–129.
- Wang, H., Liu, J., Xu, Y. and Han, Y., "Fibrillar morphology of derivatives of poly (3-alkylthiophene) s by solvent vapor annealing: Effects of conformational transition and conjugate length," *Phys. Chem. B*, **117** (2013) 5996-6006.
- Wang, M.Y., Shen, T., Wang, M., Zhang, D.E., Tong, Z.W. and Chen, J., "One-pot synthesis of α -Fe₂O₃ nanoparticles-decorated reduced graphene oxide for efficient nonenzymatic H₂O₂ biosensor," *Sensors and Actuators B: Chemical*, **190** (2014) 645-650.
- Wang, R., Xu, C., Du, M., Sun, J., Gao, L., Zhang, P., Yao, H. and Lin, C., "Solvochemical-Induced Self-Assembly of Fe₂O₃/GS Aerogels for High Li-Storage and Excellent Stability," *Small*, **10**(2014) 2260-2269.
- Wang, T., Sun, Z., Huang, D., Yang, Z., Ji, Q., Hu, N., Yin, G., He, D., Wei, H. and Zhang, Y., "Studies on NH₃ gas sensing by zinc oxide nanowire-reduced graphene oxide nanocomposites," *Sensors and Actuators B: Chemical*, **252** (2017)284-294.
- Wang, Y., Jiang, X. and Xia, Y., "A solution-phase, precursor route to polycrystalline SnO₂ nanowires that can be used for gas sensing under ambient conditions," *Journal of the American Chemical Society*, **125** (2003) 16176–16177.
- Wang, Y., Sun, L., Wang, C., Yang, F., Ren, X., Zhang, X., Dong, H. and Hu, W., "Organic crystalline materials in flexible electronics," *Chemical Society Reviews*, **48** (2019)1492-1530.
- Watson, S. M., Pike, A. R., Pate, J., Houlton, A. and Horrocks, B. R., "DNA-templated nanowires: morphology and electrical conductivity," *Nanoscale*, **6** (2014) 4027-4037.

- West, P.R., Ishii, S., Naik, G.V., Emani, N.K., ShalaeV, V.M. and Boltasseva, A., "Searching for better plasmonic materials," *Laser & Photonics Reviews*, **4**(2010)795-808.
- Wie, J.J., Nguyen, N.A., Cwalina, C.D., Liu, J., Martin, D.C. and Mackay, M.E., "Shear-induced solution crystallization of poly (3-hexylthiophene)(P3HT)" *Macromolecules*, **47** (2014) 3343-3349.
- Willot, P., Teyssandier, J., Dujardin, W., Adisojoso, J., De Feyter, S., Moerman, D., Leclère, P., Lazzaroni, R. and Koeckelberghs, G., "Direct visualization of microphase separation in block copoly (3-alkylthiophene) s," *RSC Advances*, **5** (2015) 8721-8726.
- Wu, H.L. and Phillips, P., "Polyaniline is a random-dimer model: A new transport mechanism for conducting polymers," *Physical review letters*, **66** (1991) 1366-1369.
- Wu, J.L., Chen, F.C., Hsiao, Y.S., Chien, F.C., Chen, P., Kuo, C.H., Huang, M.H. and Hsu, C.S., "Surface plasmonic effects of metallic nanoparticles on the performance of polymer bulk heterojunction solar cells," *ACS nano*, **5** (2011) 959-967.
- Wu, P.T., Xin, H., Kim, F.S., Ren, G. and Jenekhe, S.A., "Regioregular poly (3-pentylthiophene): synthesis, self-assembly of nanowires, high-mobility field-effect transistors, and efficient photovoltaic cells," *Macromolecules*, **42** (2009) 8817-8826.
- Wudl, F., Angus, R. O., Jr., Lu, F. L., Allemand, P. M., Vachon, D., Nowak, M., Liu Z. X., Schaffer, H. and Heeger, A. J., "Poly-p-phenyleneamineimine: synthesis and comparison to polyaniline," *J. Am. Chem. Soc.*, **109** (1987) 3677-3684.
- Xiang, L., Palma, J. L., Bruot, C., Mujica, V., Ratner, M. A. and Tao, N., "Intermediate tunnelling-hopping regime in DNA charge transport," *Nat. chem.*, **7** (2015) 221-226.
- Xue, X., Chandler, G., Zhang, X., Kline, R.J., Fei, Z., Heeney, M., Diemer, P.J., Jurchescu, O.D. and O'Connor, B.T., "Oriented liquid crystalline polymer semiconductor films with large ordered domains," *ACS Appl. Materials Interfaces*, **7** (2015) 26726-26734.
- Yakuphanoglu, F. and Şenkal, B.F., "Electronic and thermoelectric properties of polyaniline organic semiconductor and electrical characterization of Al/PANI MIS diode," *The Journal of Physical Chemistry C*, **111** (2007) 1840-1846.
- Yamagata, H., Pochas, C.M. and Spano, F.C., "Designing J-and H-aggregates through wave function overlap engineering: applications to poly (3-hexylthiophene)," *The Journal of Physical Chemistry B*, **116** (2012) 14494-14503.
- Yang, B.Z., Lin, Y.S. and Wu, J.M., "Flexible contact-electrification field-effect transistor made from the P3HT: PCBM conductive polymer thin film," *Applied Materials Today*, **9** (2017) 96-103.
- Yang, H., Shin, T.J., Yang, L., Cho, K., Ryu, C.Y. and Bao, Z., "Effect of mesoscale crystalline structure on the field-effect mobility of regioregular poly (3-hexyl thiophene) in thin-film transistors," *Advanced Functional Materials*, **15** (2005) 671-676.

-
- Yang, H.Y., Park, H.W., Kim, S.J., Hong, J.M., Kim, T.W., Kim, D.H. and Lim, J.A., "Intense pulsed light induced crystallization of a liquid-crystalline polymer semiconductor for efficient production of flexible thin-film transistors," *Physical Chemistry Chemical Physics*, **18** (2016) 4627-4634.
- Yang, S., Gong, Y., Liu, Z., Zhan, L., Hashim, D.P., Ma, L., Vajtai, R. and Ajayan, P.M., "Bottom-up approach toward single-crystalline VO₂-graphene ribbons as cathodes for ultrafast lithium storage," *Nano letters*, **13** (2013)1596-1601.
- Yang, W., Wan, P., Zhou, X., Hu, J., Guan, Y. and Feng, L., "Additive-free synthesis of In₂O₃ cubes embedded into graphene sheets and their enhanced NO₂ sensing performance at room temperature," *ACS applied materials & interfaces*, **6** (2014) 21093-21100.
- Yang, Y., Tian, C., Wang, J., Sun, L., Shi, K., Zhou, W. and Fu, H., "Facile synthesis of novel 3D nanoflower-like Cu_xO/multilayer graphene composites for room temperature NO_x gas sensor application," *Nanoscale*, **6** (2014)7369-7378.
- Yu, A., Park, H.W., Davies, A., Higgins, D.C., Chen, Z. and Xiao, X., "Free-standing layer-by-layer hybrid thin film of graphene-MnO₂ nanotube as anode for lithium ion batteries," *The Journal of Physical Chemistry Letters*, **2** (2011)1855-1860.
- Yu, Z., Yan, H., Lu, K., Zhang, Y. and Wei, Z., "Self-assembly of two-dimensional nanostructures of linear regioregular poly (3-hexylthiophene)," *RSC Advances*, **2** (2012)338-343.
- Zhang, H., Feng, J., Fei, T., Liu, S. and Zhang, T., "SnO₂ nanoparticles-reduced graphene oxide nanocomposites for NO₂ sensing at low operating temperature," *Sensors and Actuators B: Chemical*, **190** (2014) 472-478.
- Zhang, J., Zhu, Z., Tang, Y. and Feng, X., "Graphene encapsulated hollow TiO₂ nanospheres: efficient synthesis and enhanced photocatalytic activity," *Journal of Materials Chemistry A*, **1**(2013)3752-3756.
- Zhang, K., Han, P., Gu, L., Zhang, L., Liu, Z., Kong, Q., Zhang, C., Dong, S., Zhang, Z., Yao, J. and Xu, H., "Synthesis of nitrogen-doped MnO/graphene nanosheets hybrid material for lithium ion batteries," *ACS applied materials & interfaces*, **4** (2012) 658-664.
- Zhang, S., Ye, L. and Hou, J., "Breaking the 10% Efficiency Barrier in Organic Photovoltaics: Morphology and Device Optimization of Well-Known PBDTTT Polymers," *Advanced Energy Materials*, **6** (2016)1502529.
- Zhang, Y., Steyrlleuthner, R. and Bredas, J.L., "Charge Delocalization in Oligomers of Poly (2, 5 bis (3-alkylthiophene-2-yl) thieno [3, 2-b] thiophene)(PBTtT)," *The Journal of Physical Chemistry C* **120** (2016) 9671-9677.
- Zhang, Z., Xiao, F., Guo, Y., Wang, S. and Liu, Y., "One-pot self-assembled three-dimensional TiO₂-graphene hydrogel with improved adsorption capacities and photocatalytic and electrochemical activities," *ACS applied materials & interfaces*, **5** (2013)2227-2233.
-

Zhao, X.Y., Johnston, D.E., Rodriguez, J.C., Tao, Z., Mi, B.X. and Deng, W., “Nanostructured Semiconducting Polymer Films with Enhanced Crystallinity and Reorientation of Crystalline Domains by Electrospray Deposition,” *Macromolecular Materials and Engineering*, **302**(2017)1700090.

Zhou, D., Liu, Q., Cheng, Q., Zhao, Y., Cui, Y., Wang, T. and Han, B., “Graphene-manganese oxide hybrid porous material and its application in carbon dioxide adsorption,” *Chinese science bulletin*, **57**(2012)3059-3064.

Zhuang, J.L., Ar, D., Yu, X.J., Liu, J.X. and Terfort, A., “Patterned Deposition of Metal-Organic Frameworks onto Plastic, Paper, and Textile Substrates by Inkjet Printing of a Precursor Solution” *Advanced Materials*, **25**(2013)4631-4635.