

Oleg Gang

EXPERTISE: Self-assembly, DNA nanotechnology, soft matter, applications of nanomaterials

EDUCATION and TRAINING:

Harvard University, Cambridge, MA Postdoctoral Rothschild Fellow 2000-2002
Bar-Ilan University, Israel Soft Matter Physics with Highest Distinction; Ph.D. 2000
Bar-Ilan University, Israel Physics; B.Sc. & M.Sc. 1994

RESEARCH AND PROFESSIONAL EXPERIENCE:

2016-present *Professor*, Department of Chemical Engineering, Columbia University, NY
2016-present *Professor*, Department of Applied Physics and Applied Mathematics, Columbia University, NY
2008-present *Leader for Soft Matter and Biomaterials Theme*, Center for Functional Nanomaterials at Brookhaven National Laboratory
2009-present *Scientist*, Center for Functional Nanomaterials, BNL
2004- 2006 *Associate Scientist*, Center for Functional Nanomaterials, BNL
2004- 2006 *Assistant Scientist*, Center for Functional Nanomaterials, BNL
2002- 2004 *Goldhaber Fellow*, Physics Department, BNL

AWARDS and RECOGNITIONS (selected)

2023 Plenary speaker, IEEE Nanotechnology Conference, South Korea
2019 Visiting Professor, University of Bordeaux, Paul Pascal Research Center
2016 Inventor of the Year, Battelle Award
2016 Work included in the top 10 Scientific Advances of 2016 at Brookhaven National Laboratory
2015 Work included in the top 10 Scientific Advances of 2015 at Brookhaven National Laboratory
2014 Fellow, American Physical Society
2013 TechConnect National Innovation Award
2011 Science and Technology Award for Outstanding Achievements, Brookhaven National Laboratory
2010 Gordon Battelle Prize for Scientific Discovery
2009 US Department of Energy Outstanding Mentor Award
2002 Goldhaber Distinguished Fellowship, Brookhaven National Laboratory
2000 Rothschild Foundation Distinguished Fellowship
1998 University Presidential Award, Bar-Ilan University
1997 Wolf Foundation Scholarship for outstanding Ph.D. research

SELECTED PUBLICATIONS, from about 175 (h-index: 52, [Google Scholar](#))

1. Michelson, A., Subramanian, A., Kisslinger, K., Tiwale, N., Xiang, S., Shen, E., Kahn, J. S., Nykypanchuk, D., Yan, H., Nam, C.-Y. & Gang, O. Three-dimensional nanoscale metal, metal oxide, and semiconductor frameworks through DNA-programmable assembly and templating. *Science Advances* **10**, eadl0604 (2024). <https://doi.org/doi:10.1126/sciadv.adl0604>

2. Mao, R., Minevich, B., McKeen, D., Chen, Q., Lu, F., Gang, O. & Mittal, J. Regulating phase behavior of nanoparticle assemblies through engineering of DNA-mediated isotropic interactions. *Proceedings of the National Academy of Sciences* **120**, e2302037120 (2023).
3. Adhikari, S., Minevich, B., Redeker, D., Michelson, A. N., Emamy, H., Shen, E., Gang, O. & Kumar, S. K. Controlling the Self-Assembly of DNA Origami Octahedra via Manipulation of Inter-Vertex Interactions. *Journal of the American Chemical Society* **145**, 19578-19587 (2023). <https://doi.org/10.1021/jacs.3c03181>
4. Michelson, A., Minevich, B., Emamy, H., Huang, X., Chu Yong, S., Yan, H. & Gang, O. Three-dimensional visualization of nanoparticle lattices and multimaterial frameworks. *Science* **376**, 203-207, doi:10.1126/science.abk0463 (2022).
5. Kahn, J. S., Xiong, Y., Huang, J. & Gang, O. Cascaded Enzyme Reactions over a Three-Dimensional, Wireframe DNA Origami Scaffold. *JACS AU* **2**, 357-366 (2022).
6. Majewski, P. W., Michelson, A., Cordeiro, M. A. L., Tian, C., Ma, C. L., Kisslinger, K., Tian, Y., Liu, W. Y., Stach, E. A., Yager, K. G. & Gang, O. L. Resilient three-dimensional ordered architectures assembled from nanoparticles by DNA. *Science Advances* **7**, doi:10.1126/sciadv.abf0617 (2021).
7. Y. Tian, J. R. Lhermitte, L. Bai, T. Vo, H. L. Xin, H. Li, R. Li, M. Fukuto, K.G. Yager, J. S. Kahn, Y. Xiong, B. Minevich, S. K. Kumar, O. Gang. "Ordered three-dimensional nanomaterials using DNA-prescribed and valence-controlled material voxels". <https://doi.org/10.1038/s41563-019-0550-x>. *Nature Materials*, (2020) (featured on the cover)
8. Wenyan Liu, Miho Tagawa, Huolin Xin, Tong Wang, Hamed Emamy, Huilin Li, Kevin G. Yager, Francis W. Starr, Alexei V. Tkachenko, and Oleg Gang, "Diamond Family of Nanoparticle Superlattices", *Science* **351**, 6273, 582 (2016)
9. Yugang Zhang, Babji Srinivasan, Thi Vo, Suchetan Pal, Sanat Kumar, and Oleg Gang, "Selective Re-Programming Transforms Nanoparticle Superlattices", *Nature Materials*, **14**, 840-847 (2015)
10. Y. Zhang, F. Lu, K. G. Yager, D. van der Lelie, and O. Gang "A general strategy for the DNA-mediated self-assembly of functional nanoparticles into heterogeneous systems", *Nature Nanotechnology*, **8**, 865 (2013)
11. M. M. Maye, K. Mudalige, D. Nykypanchuk, W. Sherman, and O. Gang, "Molecularly Switchable Nanoparticle Superlattices and Clusters with Binary States", *Nature Nanotechnology*, **6**, 116, (2010).
12. D. Nykypanchuk, M. M. Maye, D. van der Lelie, and O. Gang, "DNA-guided crystallization of colloidal nanoparticles", *Nature* **451**, 549 (2008) (featured on the cover).

INVITED PRESENTATIONS (including plenary, keynote and seminars): > 210

SYNERGISTIC ACTIVITIES

- Panelist for DOE, DOD and NSF strategic workshops and sessions
- Chaired sessions at APS and MRS meetings, Gordon conference and specialized conferences
- Participated and chaired Science Advisory Committees for NSF- and DOE-funded large scale research centers
- Co-organized 16 conferences and workshops on topics of soft matter and nanotechnology
- Chief Editor for the multivolume book set "Soft Matter and Biomaterials on the Nanoscale", Part 1: 4 volumes, World Scientific Publisher, (2020)