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### Research

Dr. Gu is interested in the applications of nanotechnologies and physical sciences on biology and medicine. He established a nanofabrication facility in the Center for Applied NanoBioscience and Medicine and has been developing advanced nanoimprinting and nanocontact printing technologies for high density nanosensor arrays, which has potential for low cost genome sequencing for disease diagnostics and personalized medicine. He is also interested in novel biomaterials, processings and metrologies for tissue engineering, biomechanics and investigation of cellular microenvironment. Dr. Gu's research interests also include fluidic-based biochip technologies for point-of-care systems for biomarker detection, biosample preparation, cancer diagnostics and prognosis, disaster response and forensic genomic fingerprinting.

### Selected Publications

- P. Zhang, J. Gu, J. He, W. Gao, W. Zhang, S. Lindsay, D.R. Meldrum, "Next-generation and future DNA sequencing technologies and metagenomics", in R.W. Li, editor. "Metagenomics and its Applications in Agriculture, Biomedicine and Environmental Studies", Nova Science Publishers (Accepted).
- J. Gu, X. Xiao, B. R. Takulapalli, M. E. Morrison, P. Zhang, F. Zenhausern, "A new approach to fabricating high-density nanoarrays by nanocontact printing", J. Vac. Sci. Technol. B 26(6), 1860 (2008).
- J. Gu, R. Gupta, CF Chou, Q. Wei, F. Zenhausern, "A simple polysilsesquioxane sealing of nanofluidic channels below 10 nm at room temperature", Lab on a Chip 7(9), 1198 (2007).
- C.X. Lin, Y.G. Ke, Y. Liu, M. Mertig, J. Gu, H. Yan, "Functional DNA nanotube arrays: Bottom-up meets top-down", Angewandte Chemie-International Edition 46(32), 6089 (2007).
- J. Wang, J. Gu, F. Zenhausern, H. Sirringhaus, "Low-cost fabrication of submicron all polymer field effect transistors", Applied Physics Letters 88, 3502 (2006).
- J. Gu, C.P. Jen, Q. Wei, CF Chou, F. Zenhausern, "Mask fabrication towards sub-10 nm imprint lithography", Emerging Lithographic Technologies IX, Proceedings of SPIE Vol.#5751, 382 (2005).
- W. Wu, J. Gu, H. Ge, C. Keimel, S. Y. Chou, "Room-temperature Si single-electron memory fabricated by nanoimprint lithography", Appl. Phys. Lett. 83, 2268 (2003).
- S. Y. Chou, C. Keimel, and J. Gu, "Ultrafast and direct imprint of nanostructures in silicon", Nature 417, 835 (2002).
- J. Gu, S. Y. Chou, N. Yao, H. Zandbergen, and J. K. Farrer, "Single-crystal Si Formed on Amorphous Substrate at Low Temperature by NanoPatterning and Nickel Induced Lateral Crystallization", Appl. Phys. Lett. 81, 1104 (2002).
- J. Gu, W. Wu and S. Y. Chou, "High performance Sub-100 nm Si Thin-film Transistors by Pattern-controlled Crystallization of Thin Channel Layer and High Temperature Annealing", 60th Device Research Conference Digest, 49 (2002).