

**Contact Information:**

Phone: (602) 827-5950
Email: jgu10@arizona.edu

**Jian Gu, Ph.D.**

Associate Professor, Department of Basic Medical Sciences and
Center for Applied NanoBioscience and Medicine - The University of Arizona College of Medicine—Phoenix

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

- S. Atta, A. J. Canning, R. Odion, H. Wang, D. Hau, J. P. Devadhasan, A. J. Summers, M. A. Gates-Hollingsworth, K. J. Pflughoeft, J. Gu, D. C. Montgomery, D. P. AuCoin, F. Zenhausern, T. Vo-Dinh, "Sharp Branched Gold Nanostar-Based Lateral Flow Immunoassay for Detection of *Yersinia pestis*", *ACS Appl. Nano Mater.* (2023)
- J. P. Devadhasan, A. J. Summers, J. Gu, S. Smith, B. Thomas, A. Fattahi, J. Helton, S. G. Pandit, M. Gates-Hollingsworth, D. Hau, K. J. Pflughoeft, D. C. Montgomery, S. Atta, T. Vo-Dinh, D. AuCoin, F. Zenhausern, "Point-of-care vertical flow immunoassay system for ultra-sensitive multiplex biothreat-agent detection in biological fluids", *Biosensors and Bioelectronics* (2022)
- A. F. Harris, J. Lacombe, N. M. Sanchez-Ballester, S. Victor, K. A. J. Curran, A. R. Nordquist, B. Thomas, J. Gu, J. L. Veuthey, I. Soulairol, and F. Zenhausern, "Decellularized spinach biomaterials support physiologically relevant mechanical cyclic strain and prompt a stretch-induced cellular response", *ACS Applied Bio Materials* (2022).
- A. J. Summers, J. P. Devadhasan, J. Gu, D. C. Montgomery, B. Fisher, M. A. Gates-Hollingsworth, K. J. Pflughoeft, T. Vo-Dinh, D. P. AuCoin, and F. Zenhausern, "Optimization of an antibody microarray printing process using a designed experiment", *ACS Omega* (2022)
- A. R. Akkad, J. Gu, B. Duane, A. Norquist, D. J. Brenner, A. Ramakumar, F. Zenhausern, "Automatic reagent handling and assay processing of human biospecimens inside a transportation container for a medical disaster response against radiation", *PLOS ONE* (2022)
- J. P. Devadhasan, J. Gu, P. Chen, S. Smith, B. Thomas, M. Gates-Hollingsworth, D. Hau, S. Pandit, D. AuCoin, F. Zenhausern, "Critical comparison between large and mini vertical flow immunoassay platforms for *Yersinia Pestis* detection", *Analytical Chemistry* (2021)
- J. Gu, B. Duane, M. Repin, D. J. Brenner, F. Zenhausern, "Transportation container for pre-processing cytogenetic assays in radiation accidents", *Scientific Reports* (2021)
- J. Gu, A. Norquist, C. Brooks, M. Repin, S. Mukherjee, J. Lacombe, J. Yang, D. J. Brenner, S. Amundson, F. Zenhausern, "Development of an integrated fingerstick blood self-collection device for radiation countermeasures", *PLOS ONE* (2019)
- P. Chen, M. Gates-Hollingsworth, S. Pandit, A. Park, D. Montgomery, D. Aucoin, J. Gu, F. Zenhausern, "Paper-based Vertical Flow Immunoassay (VFI) for detection of bio-threat pathogens", *Talanta* 191 (2019) 81-88.
- H. Wang, M. Barrett, B. Duane, J. Gu, F. Zenhausern, "Materials and Processing of Polymer-based Electrochromic Devices", *Materials Science and Engineering B* 228 (2018) 167-174
- G. Dong, F. Zenhausern, J. Gu, "Wearable nanotechnology biosensor research and development and its applications in sports", *TiYu Shi You* 5, (2016) 63-64
- M. Brengues*, J. Gu* and F. Zenhausern, "Microfluidic module for blood cell separation for gene expression radiobiological assays", *Radiation Protection Dosimetry* 166 (2015) 306-310. *Equal contribution.
- J. Gu, F. Zenhausern, "Experimental characterization of methanol-acetic acid fixative sessile drop dynamics in dry and humid air by video imaging and interference analysis", *Colloid Surf. A-Physicochem. Eng. Asp.* 449 (2014) 141-147.
- C. Hurth, J. Gu, M. Aboud, M.D. Estes, A.R. Nordquist, B. McCord, and F. Zenhausern, "Direct loading of polymer matrices in plastic microchips for rapid DNA analysis: a comparative study", *Electrophoresis* 33, 2604-2611 (2012)
- B.R. Takulapalli, M.E. Morrison, J. Gu and P. Zhang, "A nanocontact printing system for sub-100 nm aligned patterning", *Nanotechnology* 22, 285302

(2011)

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)

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)

E. Leobandung, J. Gu, L. Guo, and S. Y. Chou, "Wire-channel and Wrap-around-gate Metal-oxide-semiconductor Field-effect Transistors with a Significant Reduction of Short Channel Effects", *J. Vac. Sci. Technol. B* 15(6), 2791 (1997)