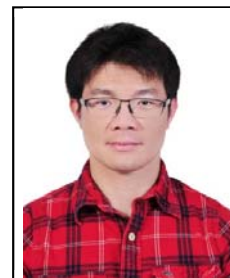


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Biography

Bi-Chang Chen received the B.S. and M.S. degrees from Chemistry Department of National Taiwan University, Taiwan in 2001 and 2003, separately. For the M.S. work, he worked on the mesoporous material synthesis under the supervision of Prof. Chung-Yuan Mou. After two-year military service, he moved to States in 2006 to complete his Ph.D. degree in chemistry at the University of Texas at Austin, where he studied about the Coherent anti-Stokes Raman Imaging technique in Dr. Sang-Hyun Lim group. After five-year training, he joined Dr. Eric Betzig's group at 2011 summer to continue his postdoctoral work to develop lattice light sheet microscopy. In 2014 April, he became an Assistant Research Fellow at Research Center for Applied Science, Academia Sinica in Taiwan. He is interested in developing fast, low phototoxicity, multi-color, and 3D detection for fluorescent living specimens with subcellular resolution imaging tools. He was promoted to Associate Research Fellow at 2020 April. Currently, he is pushing the spatial resolution in large tissue imaging.

Education and Academic Experience

2020~	Associate Research Fellow, Academia Sinica, Taipei, Taiwan Research: "Developing Optical microscopy with EM resolution "
2014 ~2020	Assistant Research Fellow, Academia Sinica, Taipei, Taiwan Research: "Advanced Optical Imaging Technique development"
2011~ 2014	Postdoctoral Associate, Howard Hughes Medical Institute/Janelia Farm Research Campus Research: "Lattice Light Sheet Microscopy" Advisor: Dr. Eric Betzig
2006 - 2011	Ph. D., Department of Chemistry and Biochemistry, The University of Texas at Austin, Austin, TX, USA Thesis Title: "Chemical Imaging with Coherent anti-Stokes Raman Scattering (CARS) Microscopy" Advisor: Professor Sang-Hyun Lim
2001 - 2003	M.S., Department of Chemistry, National Taiwan University, Taipei, Taiwan Thesis Title: "Study on the Morphology of Mesoporous Materials" Advisor: Professor Chung-Yuan Mou

1997 - 2001 **B.S., Department of Chemistry, National Taiwan University, Taipei, Taiwan**
Senior “ The dimerization of C60 in the surface of functionalized silica
Research: template”
Advisor: **Professor Chung-Yuan Mou**

Research Experience

- 2011 – 2014 **Eric Betzig group, HHMI/Janelia Farm Research Campus**
Bessel beam plane illumination
- Application of a localized signal of the Wnt3a proteins to beads, then added the beads to cell cultures and watched the behavior of individual stem cells in high-speed, high-resolution, 3D live imaging
Lattice Light Sheet Microscopy
- Developing fast, low phototoxicity, multi-color, and 3D detection for fluorescent living specimens with subcellular resolution
- Combine superresolution technique (SIM) to light sheet microscopy
- Applications ranging from single molecule tracking to high spatiotemporal imaging of subcellular dynamics within whole developing embryos.
-
- 2006 - 2011 **Department of Chemistry and Biochemistry, The University of Texas at Austin**
Broadband pulse shaping for microscopy
- Developing SPIDER (spectral phase interferometry for direct electric field reconstruction) method for multiphoton microscopy
Developing Coherent Raman Microscopy(CRM)
- Fourier transform spectral interferometric coherent anti-Stokes Raman scattering (FTSI-CARS) microscopy
- Chirped broadband frequency modulation CARS microscopy by spectral focusing
- 2D/3D chemical imaging for polymer mixture, cell and tissues
- CARS Spectral imaging for tissue histology
- Chirped broadband stimulated Raman scattering (SRS) microscopy in fingerprint region
Polarized four-wave mixing microscopy for confined liquid crystals
- Fabrication of 3D structure by multiphoton absorption polymerization
- Four-wave mixing microscopy and broadband pulse compression
- 2001-2003 **Department of Chemistry, National Taiwan University, Taipei, Taiwan**
Studying morphology control of mesoporous materials
- Synthesis of SBA-15 mesoporous silica via hydrothermal method
- Characterization of mesoporous materials by transmission electron microscopy (TEM), scanning electron microscopy (SEM) and N₂ adsorption-desorption isotherm methods
- 2000 **Department of Chemistry, National Taiwan University, Taipei, Taiwan**
Studying the dimerization of C60 and surface modification of silica
- Surface modification by molecular imprinting method
- Diels-Alder reaction synthesis method
-

Publications

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47. Chu, L.-A. *, Chang, S.-W., Tang, W.-C., Tseng, Y.-T., Chen, P., **Chen, B.-C. ***, "5D super-resolution imaging for a live cell nucleus" *Current Opinion in Genetics & Development*, 67, 77 DOI:[10.1016/j.gde.2020.11.005](https://doi.org/10.1016/j.gde.2020.11.005) (2021)
46. Fan, Y.-J. *, Hsieh, H.-Y., Tsai, S.-F., Wu, C.-H., Lee, C.-M., Liu, Y.-T., Lu, C.-H., Chang, S.-W. *, **Chen, B.-C. ***, "Microfluidic channel integrated with a lattice lightsheet microscopic system for continuous cell imaging" *Lab chip*, 21, 344 DOI: [10.1039/d0lc01009j](https://doi.org/10.1039/d0lc01009j) (2021)
45. Chen, Y., Li, X., Zhang, D., Wang, C., Feng, R., Li, X., Wen, Y., Xu, H., Zhang, X. S., Chen, Y., Feng, Y., Zhou, B., **Chen, B.-C.**, Chen, P., Lei, K., Cai, S., Jia, J.-M., Gao, L. "A Versatile Tiling Light Sheet Microscope for Imaging of Cleared Tissues" *Cell Reports*, 33, 108349 DOI:[10.1016/j.celrep.2020.108349](https://doi.org/10.1016/j.celrep.2020.108349) (2020)
44. Chang, R.-L., Pratiwi, F. W., **Chen, B.-C.**, Chen, P., Wu, S.-H. , Mou, C.-Y. "Simultaneous Single-particle Tracking and Dynamic pH Sensing Reveal Lysosome-targetable Mesoporous Silica Nanoparticles Pathways" *ACS Applied Materials & Interfaces*, 12, 42472 DOI:[10.1021/acsami.0c07917](https://doi.org/10.1021/acsami.0c07917) (2020)
43. Amartuvshin, O., Lin, C.-H., Hsu, S.-C., Kao, S.-H., Chen, A., Tang, W.-C., Chou, H.-L., Chang, D.-L., Hsu, Y.-Y., Hsiao, B.-S., Rastegari, E., Lin, K.-Y., Wang, Y.-T., Yao, C.-K., Chen, G.-C., **Chen, B.-C.**, Hsu, H.-J. "Aging shifts mitochondrial dynamics toward fission to promote germline stem cell loss" *Aging Cell*, 19, e13191 DOI:[10.1111/accel.13191](https://doi.org/10.1111/accel.13191) (2020)
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41. Chakraborty, A. Lin, W.-C., Lin, Y.-T., Huang, K.-J., Wang, P.-Y., Chang, I. Y.-F., Wang, H.-I., Ma, K.-T., Wang, C.-Y., Huang, X.-R., Lee, Y.-H., **Chen, B.-C.**, Hsieh, Y.-J., Chieh, K.-Y., Lin, T.-Y., Liu, J.-L., Sung, L.-Y., Yu, J.-S., Chang, Y.-S. and Pai, L.-M. SNAP29 mediates the assembly of histidine-induced CTP synthase filaments in proximity to the cytokeratin network, *Journal of Cell Science*, 133, jcs240200. DOI:[10.1242/jcs.240200](https://doi.org/10.1242/jcs.240200) (2020)
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39. Chang, B.-J.; Tang, W.-C.; Liu, Y.-T.; Tsai, Y.-C.; Tsao, C.; Chen, P.; **Chen, B.-C.*** "Two-beam interference lattice lightsheet for structured illumination microscopy" *J. Phys. D: Appl. Phys.*, 53 044005, DOI:[10.1088/1361-6463/ab50e2](https://doi.org/10.1088/1361-6463/ab50e2) (2020)
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27. Veltman, D. M.; Williams, T. D.; Bloomfield, G; **Chen, B.-C.**; Betzig, E.; Insall R.H. and Kay, R. R., A plasma membrane template for macropinocytic cups, *eLife*, 5:e20085 [DOI:10.7554/eLife.20085](https://doi.org/10.7554/eLife.20085) (2016)
26. Jung, G; Alexander, C. J.; Wu, X.; Piszczek, G; **Chen, B.-C.**; Betzig, E. and Hammer, J. A., V-1 Regulates Capping Protein Activity in Vivo, *PNAS* 113, E6610–E6619 [DOI:10.1073/pnas.1605350113](https://doi.org/10.1073/pnas.1605350113) (2016)
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23. Yamashita, N.; Morita, M.; Legant, W. R.; **Chen, B.-C.**; Betzig, E.; Yokoto, H.; Mimori-Kiyosue, Y., Three-dimensional tracking of plus-tips by lattice light-sheet microscopy permits the quantification of microtubule growth trajectories within the mitotic apparatus, *J. Biomed. Opt.*, 20, 101206. [DOI:10.1117/1.JBO.20.10.101206](https://doi.org/10.1117/1.JBO.20.10.101206). (2015)

22. Xie, J.; Wooten, M.; Tran, V.; **Chen, B.-C.**; Pozmanter, C.; Simbolon, C.; Betzig, E.; Chen, X., Histone H3 Threonine Phosphorylation Regulates Asymmetric Histone Inheritance in the Drosophila Male Germline. *Cell*, 163, 920-933 . DOI: [10.1016/j.cell.2015.10.002](https://doi.org/10.1016/j.cell.2015.10.002). (2015).
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3. Yeh, Y.-Q.; **Chen, B.-C.**; Lin, H.-P.; Tang, C.-Y., Synthesis of Hollow silica Spheres with Mesostructured Shell Using Cationic-Anionic-Neutral Block Copolymer Ternary Surfactants. *Langmuir*, 22, 6-9. DOI: [10.1021/la052129y](https://doi.org/10.1021/la052129y) (2006).
2. **Chen, B.-C.**; Chao, M.-C.; Lin, H.-P.; Mou, C.-Y., Faceted single crystals of mesoporous silica SBA-16 from a ternary surfactant system: surface roughening model. *Microporous and Mesoporous Material*, 81, 241-249. DOI: [10.1016/j.micromeso.2005.02.010](https://doi.org/10.1016/j.micromeso.2005.02.010) (2005).
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Conference papers

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4. Tang, W.-C.; Chen, P.; **Chen, B.-C.** Monitoring ruffling cells by lattice light-sheet microscopy, *Proc. of SPIE* 10711, DOI: [10.1117/12.2322935](https://doi.org/10.1117/12.2322935) (2018)
3. Lu, C.-H.; Chen, P.; **Chen, B.-C.** Large scale super-resolution 3D imaging: light-sheet single-molecule localization microscopy, *Proc. of SPIE* (2017)
2. **Chen, B.-C.** Scanless lattice light sheet microscopy, *Microsc. Microanal.* 21, DOI: [10.1017/S1431927615004377](https://doi.org/10.1017/S1431927615004377) (2015)
1. Tsai, H.-C.; Chang, C.-F.; **Chen, B.-C.**; Cheng, J.-Y.; Chu, C.-W. et al. Research on imaging, sensing, and characterization of cells at Research Center for Applied Sciences (RCAS), Academia Sinica, *Proc. of SPIE* DOI: [10.1117/12.2199475](https://doi.org/10.1117/12.2199475) (2015)

Invited talks

1. The 5th International Conference on Optofluidics: as invited speaker, 2015
2. 2nd Light Sheet Fluorescence Microscopy International Conference : as keynote speaker, 2015
3. Microscopy and Microanalysis: as invited speaker, 2015

4. FOM 2016, Focus on Microscopy Conference: as invited speaker, 2016
5. The 9th International Conference on Nanophotonics (ICNP), as invited speaker, 2016
6. 4th Light Sheet Fluorescence Microscopy International Conference, Singapore : as invited speaker, 2017
7. Single-Cell Biophysics: Measurement, Modulation, and Modeling, Taipei, 2017
8. 2nd Croucher Summer Course on “Advanced Imaging- Single Molecule & Super-resolution in Biomedical Research” University of Hong-Kong, 2017
9. EMBO”BASEL LIFE” as invited speaker, 2017
10. Superresolution Microscopy Workshop at Singapore 2017, as invited speaker
11. SPIE Structured Light- Biomedical Imaging and Sensing Conference (BISC), Japan 2018

Award

1. The 2015 AAAS Newcomb Cleveland Prize
The Association's oldest prize, now supported by The Fodor Family Trust, annually recognizes the author(s) of an outstanding paper published in the Research Articles or Reports sections of the journal Science between June and the following May.
2. 2020 第十八屆有庠科技論文獎-光電組
3. 2021 中央研究院年輕學者研究成果獎