

**Dr. Yong Hou**

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### **Education and Career**

12.2020-                    Postdoc, The University of Hong Kong

09.2015-12.2019        Ph.D., Chemistry

Freie Universität Berlin (Germany)

Supervisor: Prof. Dr. Rainer Haag

09.2012-06.2015        M.S., Chemical Biology

Northwest Agriculture & Forestry University, Xianyang (China)

09.2008-06.2012        B.S., Chemistry

Zhengzhou University, Zhengzhou, (China)

### **Research interests:**

- Cellular mechanotransduction at cell-matrix interface
- Optical biosensing technology (quantum biosensing based on the diamond with NV centers, GaN photonic chip)
- Soft biomaterial and tissue engineering

### **Five Selected Recent Publications**

- Leixiao Yu<sup>‡</sup>, ***Yong Hou***<sup>‡</sup>, Wenyan Xie, Luis Cuellar Camacho, Chong Cheng, Andrew Holle, Jennifer Young, Britta Trappmann, Elisabetta A. Cavalcanti-Adam, Qiang Wei, Changsheng Zhao, Joachim P. Spatz, Rainer Haag. “Ligand diffusion enables force-independent cell adhesion via activating  $\alpha 5 \beta 1$  integrin and initiating Rac and RhoA signaling.” *Adv. Mater.* **2020**, 32, 202002566. (<sup>‡</sup> **Co-first author**)

- **Yong Hou**, Wenyan Xie, Leixiao Yu, Luis Cuellar Camacho, Man Zhang, Zhiqin Chu, Qiang Wei, Rainer Haag. Surface Roughness and Substrate Stiffness Synergize to Drive Cellular Mechanoresponse. *Nano Lett.* **2020**, 20, 748-757. (**Highly cited paper**)
- Gao, Lingyan‡, **Yong Hou**‡, Haojie Wang, Mingjun Li, Linjie Ma, Zhiqin Chu, Ievgen S. Donskyi, and Rainer Haag. “A Metal-Ion-Incorporated Mussel-Inspired Poly (Vinyl Alcohol)-Based Polymer Coating Offers Improved Antibacterial Activity and Cellular Mechanoresponse Manipulation.” *Angew. Chem. Int. Ed.* **2022**, e202201563. (‡ **Co-first author**)
- **Yong Hou**‡, Jixiang Jing‡, Yumeng Luo, Feng Xu, Wenyan Xie, Linjie Ma, Xingyu Xia, Qiang Wei, Yuan Lin, Kwai Hei Li, and Zhiqin Chu. “A versatile, incubator-compatible, monolithic GaN photonic chipscope for label-free monitoring of live cell activities.” *Adv. Sci.* **2022**, Accepted. (‡ **Co-first author**)
- **Yong Hou**, Wenyan Xie, Leixiao Yu, Luis Cuellar Camacho, Chuanxiong Nie, Man Zhang, Rainer Haag, Qiang Wei. “Surface roughness gradients reveal topography-specific mechanosensitive responses in human mesenchymal stem cells.” *Small* **2020**, 16, 1905422. (**Highly cited paper**)

#### Publication and patent list:

1. **Yong Hou**‡, Jixiang Jing‡, Yumeng Luo, Feng Xu, Wenyan Xie, Linjie Ma, Xingyu Xia, Qiang Wei, Yuan Lin, Kwai Hei Li, and Zhiqin Chu. “A versatile, incubator-compatible, monolithic GaN photonic chipscope for label-free monitoring of live cell activities.” *Adv. Sci.* **2022**, Accepted. (‡ **Co-first author**)
2. Gao, Lingyan‡, **Yong Hou**‡, Haojie Wang, Mingjun Li, Linjie Ma, Zhiqin Chu, Ievgen S. Donskyi, and Rainer Haag. “A Metal-Ion-Incorporated Mussel-Inspired Poly (Vinyl Alcohol)-Based Polymer Coating Offers Improved Antibacterial Activity and Cellular Mechanoresponse Manipulation.” *Angew. Chem. Int. Ed.* **2022**, e202201563. (‡ **Co-first author**)
3. Jing, Jixiang, **Yong Hou**, Yumeng Luo, Liang Chen, Linjie Ma, Yuan Lin, Kwai Hei Li, and Zhiqin Chu. “Chip-Scale In Situ Salinity Sensing Based on a Monolithic Optoelectronic Chip.” *ACS sensors* **2022**, 7, 849–855.
4. Wu, Di, **Yong Hou**, Zhiqin Chu, Qiang Wei, Wei Hong, and Yuan Lin. “Ligand Mobility-Mediated Cell Adhesion and Spreading.” *ACS Appl. Mater. Interfaces* **2022**, 14, 12976–12983
5. **Yong Hou**, Wenyan Xie, Xin Fan, Peng Tang, Leixiao Yu, and Rainer Haag, “Raspberry”

Hierarchical Topographic Features Regulate Human Mesenchymal Stem Cell Adhesion and Differentiation via Enhanced Mechanosensing.” *ACS Appl. Mater. Interfaces* **2021**, 13, 54840-54849.

6. Qian Sun<sup>‡</sup>, **Yong Hou**<sup>‡</sup>, Zhiqin Chu, Qiang Wei, “Soft overcomes the hard: Flexible materials adapt to cell adhesion to promote cell mechanotransduction.” *Bioactive Materials* **2021**, 10, 397-404. (‡ Co-first author)
7. Zhang, Man, Qian Sun, Yiling Liu, Zhiqin Chu, Leixiao Yu, **Yong Hou**, Heemin Kang et al. “Controllable ligand spacing stimulates cellular mechanotransduction and promotes stem cell osteogenic differentiation on soft hydrogels.” *Biomaterials* **2021**, 268, 120543.
8. Chowdhury, Mohammad Suman, Wenshan Zheng, Abhishek Kumar Singh, Irvine Lian Hao Ong, **Yong Hou**, John A. Heyman, Abbas Faghani, Esther Amstad, David A. Weitz, and Rainer Haag. "Linear triglycerol-based fluorosurfactants show high potential for droplet-microfluidics-based biochemical assays." *Soft Matter*. **2021**, 17, 7260-7267.
9. Yu, Leixiao, Peng Tang, Chuanxiong Nie, **Yong Hou**, and Rainer Haag. “Well - Defined Nanostructured Biointerfaces: Strengthened Cellular Interaction for Circulating Tumor Cells Isolation.” *Adv. Health. Mater.* **2021**, 2002202.
10. Leixiao Yu<sup>‡</sup>, **Yong Hou**<sup>‡</sup>, Wenyan Xie, Luis Cuellar Camacho, Chong Cheng, Andrew Holle, Jennifer Young, Britta Trappmann, Elisabetta A. Cavalcanti-Adam, Qiang Wei, Changsheng Zhao, Joachim P. Spatz, Rainer Haag. “Ligand diffusion enables force-independent cell adhesion via activating  $\alpha 5\beta 1$  integrin and initiating Rac and RhoA signaling.” *Adv. Mater.* **2020**, 32, 202002566. (‡ Co-first author)
11. **Yong Hou**, Wenyan Xie, Leixiao Yu, Luis Cuellar Camacho, Man Zhang, Zhiqin Chu, Qiang Wei, Rainer Haag. Surface Roughness and Substrate Stiffness Synergize to Drive Cellular Mechanoresponse. *Nano Lett.* **2020**, 20, 748-757. (*Highly cited paper*)
12. **Yong Hou**, Wenyan Xie, Leixiao Yu, Luis Cuellar Camacho, Chuanxiong Nie, Man Zhang, Rainer Haag, Qiang Wei. “Surface roughness gradients reveal topography-specific mechanosensitive responses in human mesenchymal stem cells.” *Small* **2020**, 16, 1905422. (*Highly cited paper*)
13. Yu, Leixiao, **Yong Hou**, Wenyan Xie, Jose Luis Cuellar-Camacho, Qiang Wei, and Rainer Haag. “Self-Strengthening Adhesive Force Promotes Cell Mechanotransduction.” *Adv. Mater.* **2020**, 32, 2006986.
14. Zhong, Yinan, Jianguang Zhang, Junmei Zhang, **Yong Hou**, Enping Chen, Dechun Huang, Wei

- Chen, and Rainer Haag. “Tumor Microenvironment-Activatable Nanoenzymes for Mechanical Remodeling of Extracellular Matrix and Enhanced Tumor Chemotherapy.” *Adv. Funct. Mater.* **2020**,2007544.
15. Randriantsilefisoa Rotsiniaina, **Yong Hou**, Yuanwei Pan, José Luis Cuellar Camacho, Michaël W. Kulka, Jianguang Zhang, and Rainer Haag. “Interaction of Human Mesenchymal Stem Cells with Soft Nanocomposite Hydrogels Based on Polyethylene Glycol and Dendritic Polyglycerol.” *Adv. Funct. Mater.* **2020**, 30, 1905200.
  16. **Yong Hou**, Wenyan Xie, Katharina Achazi, Jose Luis Cuellar-Camacho, Matthias F. Melzig, Wei Chen, and Rainer Haag. “Injectable degradable PVA microgels prepared by microfluidic technology for controlled osteogenic differentiation of mesenchymal stem cells.” *Acta biomaterialia* **2018**, 77, 28-37.
  17. Huang, Xiaobin‡, **Yong Hou**‡, LeiLei Zhong, Dechun Huang, Hongliang Qian, Marcel Karperien, and Wei Chen. “Promoted chondrogenesis of cocultured chondrocytes and mesenchymal stem cells under hypoxia using in-situ forming degradable hydrogel scaffolds.” *Biomacromolecules* **2017**, 19, 94-102. (‡ **Co-first author**)
  18. Wang, Xinxin, Yuxin Pei, **Yong Hou**, and Zhichao Pei. “Fabrication of core-shell magnetic molecularly imprinted nanospheres towards hypericin via click polymerization.” *Polymers* **2019**, 11, 313.
  19. Leixiao Yu, Christoph Schlaich, **Yong Hou**, Jianguang Zhang, Paul-Ludwig Michael Noeske, Rainer Haag. “Photoregulating Antifouling and Bioadhesion Functional Coating Surface Based on Spiropyran.” *Chem.Eur.J.* **2018**, 24, 7742–7748.
  20. Leixiao, Yu, **Yong Hou**, Chong Cheng, Christoph Schlaich, Paul-Ludwig Michael Noeske, Qiang Wei, and Rainer Haag. “High-antifouling polymer brush coatings on nonpolar surfaces via adsorption-cross-linking strategy.” *ACS Appl. Mater. Interfaces*, **2017**, 9, 44281-44292.
  21. Chen, Wei, **Yong Hou**, Zhaoxu Tu, Lingyan Gao, and Rainer Haag. “pH-degradable PVA-based nanogels via photo-crosslinking of thermo-preinduced nanoaggregates for controlled drug delivery.” *Journal of Controlled Release* **2017**, 259, 160-167.
  22. **Yong Hou**, Shoupeng Cao, Lin Wang, Yuxin Pei, Guoyun Zhang, Siwen Zhang and Zhichao Pei. Morphology-controlled dual clickable nanoparticles via ultrasonic-assisted click polymerization. *Polym. Chem.*, **2015**, 6, 223-227.
  23. **Yong Hou**, Shoupeng Cao, Xueming Li, Beibei Wang, Yuxin Pei, Lin Wang, and Zhichao Pei. One-Step Synthesis of Dual Clickable Nanospheres via Ultrasonic-Assisted Click Polymerization for Biological Applications. *ACS Appl. Mater. Interfaces*, **2014**, 6, 16909–

16917.

24. Jinpeng Li, ***Yong Hou***, Xiaofang Li, Huijuan Lü, and Hongwei Hou. 1-D Helical Co(II) Metal-organic Polymer: Synthesis, Structure, and Fluorescent Property. *Synth. React. Inorg. M.*, **2010**,40, 893–898,
25. Jinpeng Li, Zhijia Song, Huijuan Lü, ***Yong Hou***, Hongwei Hou, Yaoting Fan. Two distinct ferrocenyl carboxylate Pb(II) complexes with the same composition prepared by two different synthetic methods: The substitution of precursor and one-pot reaction. *Inorg. Chem.*, **2010**, 134, 436–439.

#### **Patents**

1. Process for synthesizing hypericin by monochromatic light initiation. Pei, Yuxin; Li, Zebo; Pei, Zhichao; ***Hou, Yong***, Faming Zhuanli Shenqing (2013), CN103274920 A 20130904
2. Method for preparation of polymer nanospheres and nanorods by ultrasonic wave assisted soap-free click polymerization. Pei, Yuxin; ***Hou, Yong***; Pei, Zhichao; Cao, Shoupeng; Wang, Lin; Wang, Beibei, Faming Zhuanli Shenqing (2014), CN 103788370 A 20140514.