Personal Information

Name: Cailing Chen **Email:** ccl15@mails.jlu.edu.cn
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Place and Date of Birth: Yulin, P. R. China | May 13th 1991
Address: State Key Laboratory of Inorganic Synthesis and Preparative Chemistry B626, Jilin University, Changchun 130012, P. R. China.

Education

09/2009 – 06/2013	B.S. in Chemistry of Materials College of Chemistry, Jilin University **(JLU)**, P. R. China
09/2013 – Present	PhD Candidate in Inorganic Chemistry, Supervisor: Prof. **Zhan Shi** State Key Laboratory of Inorganic Synthesis and Preparative Chemistry, Jilin University (**JLU**), P. R. China.
05/2016 – 08/2016	Visiting student, Supervisor: Prof. **Yu Han** King Abdullah University of Science and Technology (**KAUST**), Saudi Arabia.

Honors and Awards

- ★ 2017, National Scholarship for Graduate Students (top 1%)
- ★ 2016, Excellent Graduate Student Award of Jilin University (top 5%)
- ★ 2015-2016, Second Prize of Jilin University Scholarship (top 10%)
- ★ 2014-2015, Second Prize of Jilin University Scholarship (top 10%)
- ★ 2013-2014, Jilin University Basic Scholarship (top 20%)
- ★ 2013, National Scholarship for Graduate Students (top 1%)
- ★ 2017, Second Prize of the 31th Elite Cup of Jilin University
- ★ 2017, First Prize of the 10th Doctoral Academic Forum of Jilin University

Research Interests

- ➢ Synthesis and surface modification of colloid nanomaterials.
- ➢ Applications of nanocomposites based on rare earth upconversion fluorescent nanoparticles in disease diagnosis and treatment.
- ➢ Applications of inorganic fluorescent nanomaterials in detection of metal ions, biogases, etc.

Skills

- ✓ I have developed a wide and complementary knowledge of many synthetic techniques such as hydrothermal/solvothermal, sol-gel, co-precipitation, thermal decomposition and solid-sate synthesis.
- ✓ I can schematically characterize the structures of nanostructured materials and measure their physiochemical properties using a variety of facilities, including TEM, LSCM, XRD, PL, SEM, UV-VIS-IR spectrometer, FT-IR, DSC/TGA, ICP, Raman, XPS. Especially TEM, I served as a laboratory TEM technician for three years.
- ✓ I can skillfully process and analyze the raw data using many softwares, *such as* Digital Micrograph, Origin, CIE, ChemBioOffice, Jade, XPS Peakfit, Endnote, PS, 3Ds max and AI.

Conferences

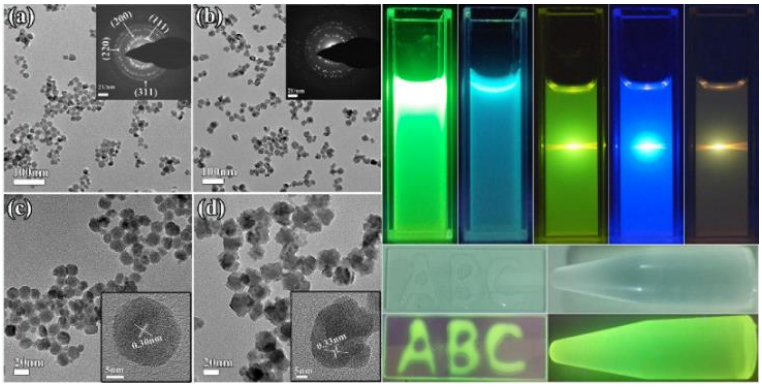
- 6th International Conference on Nanoscience and Technology, September 2015, Beijing (Poster)
- Horiba Fluorescence Training Course, November 2015, Beijing
- 9th Academic Forum for Doctoral Students of Jilin University, November 2016, Changchun (Oral Presentation)
- 7th International Conference on Nanoscience and Technology, August 2017, Beijing (Poster)
- 10th Academic Forum for Doctoral Students of Jilin University, November 2017, Changchun (Oral Presentation)

Publications

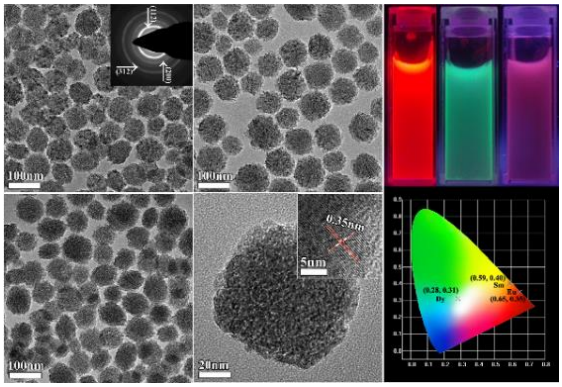
1. **C. Chen**; Y.Yu; C. Li*; D. Liu; H. Huang, C. Liang; Y. Lou; Y. Han; Z. Shi*; S. Feng, Facile synthesis of water-soluble t-$LaVO_4$:Ln^{3+} nanoparticles for anti-fake ink and latent fingermark detection. ***Small.*** 2017, Accepted, DOI:10.1002/smll.201702305.
2. **C. Chen**; J. Liu; Y. Chen; C. Li*; X. Liu; H. Huang; C. Liang; Y. Lou; Z. Shi; S. Feng, Sub-10 nm Sr_2LuF_7:Yb/Er@Sr_2GdF_7@SrF_2 up-conversion nanocrystals for up-conversion luminescence-magnetic resonance-computed tomography trimodal bioimaging. ***ACS Appl. Mater. Interfaces*** 2017, *9* (7), 5748-56.
3. **C. Chen**; C. Li*; Z. Shi*, Current advances in lanthanide-doped upconversion nanostructures for detection and bioapplication. ***Adv. Sci.*** 2016, *3* (10), 1600029.
4. **C. Chen**; J. Li; C. Li*; H. Huang; C. Liang; Y. Lou; D. Liu; Z. Wang; Z. Shi*; S. Feng, Facile synthesis of water-soluble YVO_4:Eu nanoparticles for Cu^{2+} detection in aqueous solution. ***ChemistrySelect*** 2016, *1* (7), 1417-20.
5. **C. Chen**; C. Li*; T. Li; J. Liu; H. Huang; T. Bai; Z. Wang; Z. Shi*; S. Feng, Water-soluble, monodisperse, lanthanide-doped Y(Gd)VO_4 nanocrystals as promising multimodal bioprobe. ***Eur. J. Inorg. Chem.*** 2015, *2015* (19), 3108-15.
6. **C. Chen**; C. Li*; L. Zhao; X. Liu; T. Bai; H. Huang; Z. Shi*; S. Feng, A facile synthesis of water-soluble $BaYF_5$:Ln^{3+} NCs with excellent luminescent properties as promising contrast agent for dual-modal bioimaging. ***Inorg. Chem. Commun.*** 2015, *62*, 11-4.
7. W. Cheng; **C. Chen**; Y. Yu; C. Li; L. Gao*; Z. Shi, Facile synthesis of ZIFs-derived hollow bimetal (Zn,Co)S nanocrystals for supercapacitors. ***Chemical Journal of Chinese Universities***, 2017, *38*(8), 1303-8.
8. T. Bai; S. Xing; Y. Lou; **C. Chen**; H. Huang; C. Li*; Z. Shi*; S. Feng, Colloidal synthesis of quaternary wurtzite Cu_3AlSnS_5 nanocrystals and their photoresponsive properties. ***ChemPlusChem*** 2015, *80* (4), 652-5.
9. C. Liang; J. Bao; C. Li; H. Huang; **C. Chen**; Y. Lou; H. Lu*; H. Lin; Z. Shi*; S. Feng, One-dimensional hierarchically porous carbon from biomass with high capacitance as supercapacitor materials. ***Micropor. Mesopor. Mat.*** 2017, *251,* 77-82.
10. D. Ma; B. Li*; Z. Cui; K. Liu; **C. Chen**; G. Li; J. Hua; B. Ma; Z. Shi*; S. Feng, Multifunctional luminescent porous organic polymer for selectively detecting iron ions and 1,4-dioxane via luminescent turn-off and turn-on sensing. ***ACS Appl. Mater. Interfaces*** 2016, *8* (36), 24097-103.
11. Y. Lou; C. Li; X. Gao; T. Bai; **C. Chen**; H. Huang; C. Liang; Z. Shi*; S. Feng, Porous Pt nanotubes with high methanol oxidation electrocatalytic activity based on original bamboo-Shaped Te nanotubes. ***ACS Appl. Mater. Interfaces*** 2016, *8* (25), 16147-53.
12. H. Huang; C. Li; S. Zhu; H. Wang; **C. Chen**; Z. Wang; T. Bai; Z. Shi*; S. Feng, Histidine-derived nontoxic nitrogen-doped carbon dots for sensing and bioimaging applications. ***Langmuir*** 2014, *30* (45), 13542-8.
13. Y. Lou; W. Zhao; C. Li*; H. Huang; T. Bai; **C. Chen**; C. Liang; Z. Shi*; D. Zhang; X. Chen; S. Feng, Application of $Cu_3InSnSe_5$ heteronanostructures as counter electrodes for dye-sensitized solar cells. ***ACS Appl. Mater. Interfaces*** 2017, *9* (21), 18046-53.
14. T. Bai; C. Li; F. Li; L. Zhao; Z. Wang; H. Huang; **C. Chen**; Y. Han; Z. Shi*; S. Feng, A simple solution-phase approach to synthesize high quality ternary $AgInSe_2$ and band gap tunable quaternary $AgIn(S_{1-x}Se_x)_2$ nanocrystals. ***Nanoscale*** 2014, *6* (12), 6782-9.

Research Experience

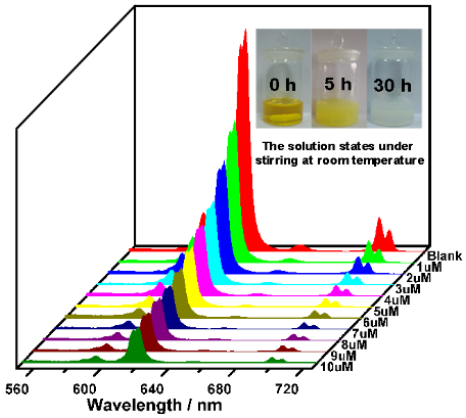
- Monodisperse, water-dispersible $BaYF_5:Ln^{3+}$ nanospheres and nanoflowers were synthesized via microwave-assisted modified polyol process. The obtained NCs with excellent up-down luminescent property and X-ray absorption property have great potential as optical/CT bioprobe (***Inorg. Chem. Commun.*** 2015, *62*, 11-4).



- Monodisperse water-dispersible Ln^{3+}-doped YVO_4 NCs were synthesized through a microwave-assisted hydrothermal method. $GdCl_3$ gradually replaced $YCl_3 \cdot 6H_2O$ from 0% to 100% to obtain $GdVO_4:Ln^{3+}$ NCs. $Y(Gd)VO_4:Ln^{3+}$ CNs are promising for 3D displays and fluorescent/magnetic/CT bio-imaging applications due to their excellent properties (***Eur. J. Inorg. Chem.*** 2015, *2015* (19), 3108-15).

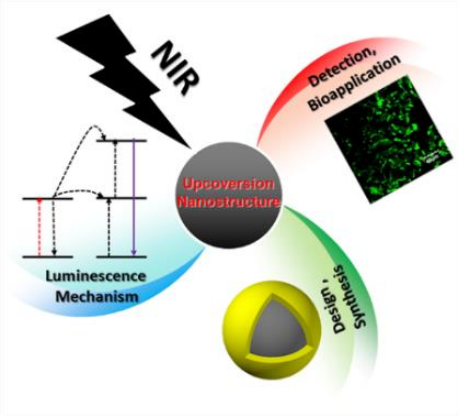


- The monodisperse and water-soluble YVO_4:Eu nanoparticles with uniform size and shape were synthesized by co-precipitation at room temperature. The strong red emission from YVO_4:Eu NPs could be selectively quenched by Cu^{2+} ions with limit of detection as low as 0.57 μM (***ChemistrySelect*** 2016, *1* (7), 1417-20).

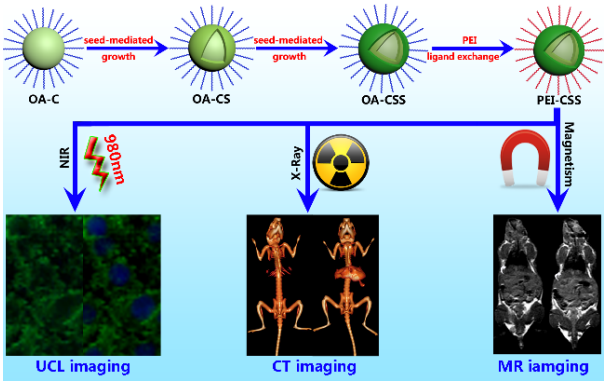


- The current advances in lanthanide-doped upconversion nanostructures for detection and bioapplication is reviewed. The upconversion luminenscence mechanism and basic synthetic and modification methods of upconversion nanostructures are introduced, alongside the design and fabrication of core-shell nanocomposites. The application

of upconversion nanostructures in detection, bioimaging and biomedical therapy are also discussed (***Adv. Sci.*** 2016, *3* (10), 1600029).



- Sub-10 nm Sr_2LuF_7:Yb/Er@Sr_2GdF_7@SrF_2 core-shell upconversion nanocrystals with uniform shape and high monodispersity were synthesized by a seed-mediated growth process for the first time. After modification by PEI, in vitro cell upconversion imaging with low auto-fluorescence was realized. Due to the presence of Gd^{3+} ions, in vivo MR imaging was also achieved with these designed NCs. More significantly, these special core-shell NCs exhibited high contrast in in-vivo X-ray CT imaging because of their good X-ray absorption ability (***ACS Appl. Mater. Interfaces*** 2017**,** *9* (7), 5748-56).



- Highly water-soluble lanthanide (Ln^{3+})-doped tetragonal phase (t-) $LaVO_4$ nanoparticles have been successfully obtained via a facile environmental-friendly microwave-assisted hydrothermal method. The aqueous solutions of Ln^{3+}-doped t-$LaVO_4$ exhibited excellent fluorescence properties under UV excitation. Moreover, the as-prepared nanoparticles are used in security application of anti-fake ink and detection of latent fingerprint, because of their excellent fluorescence (***Small.*** 2017, DOI:10.1002/smll.201702305).