光学

研究方向：
1. 磁光学及其应用
2. 光电增强技术
3. 光控计算技术
4. 光电信息系统的理论与实验
5. 新型光子学与光电子技术
6. 光学化学与技术

师资力量：

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<th>学历</th>
<th>职称</th>
<th>研究方向或领域</th>
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<tr>
<td>王光</td>
<td>博士</td>
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<td>磁光学, 光子信息</td>
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<tr>
<td>李海</td>
<td>博士</td>
<td>教授</td>
<td>光电化学, 新型材料光学</td>
<td><a href="mailto:lic@bnu.edu.cn">lic@bnu.edu.cn</a></td>
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<tr>
<td>张红</td>
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国际合作：

美国西蒙夫特大学访问学者

美国哈佛大学访问学者

研究平台：

- 磁光学与光电子学实验室
- 光电化学实验室

人才引进：

引进国内外杰出人才
### Wildcards 通配符

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| *    | 零个或多个字符  
gene*  
gene, genetics, generation |
| $    | 零或一个字符  
colo$r  
color, colour |
| ?    | 只代表一个字符  
en?oblast  
entoblast, endoblast |
• 由于英文本身词格的变化，相同意义的词汇不同的词格，有不同的词后缀，所以要尽量使用词根+通配符（*代表n个字母）
  - 例：biolog* 代表 biology, biologist, biologists, and biological

• 由于英、美拼写方式的不同造成的同一个词的拼写略有不同
  - 例：sul*ur 代表 sulfur 和 sulphur

• 有的时候对此的拼写不确定时，可以使用通配符代替
  - 例：Barthold？

应用举例：互联网对学龄儿童教育有怎样的影响？

应用举例：How does the internet influence the education of school-age children?

• For maximum retrieval
  
  (internet or www or world wide web) AND (school?age

•

  and child* AND (educa* or teach*)
1. Title: Extreme conditions during multibubble cavitation: Sono luminescence as a spectroscopic probe  
   Author: Suslick KS, Edgington NC, Flamminger DJ, et al.  
   Conference: 12th Meeting of the European-Society-of-Sonochemistry, MAY 30-JUN 03, 2010 Chania, GREECE  
   Journal: ULTRASONICS SONOCHEMISTRY  Volume 18  Issue 4  Pages 842-846  Published: JUL 2011  
   Article type: Article

2. Title: Acoustic cavitation for engineering of gold cats in silver nitrate solutions  
   Author: Reddick DJ, Shochak DN, Mohwald H  
   Conference: 12th Meeting of the European-Society-of-Sonochemistry, MAY 30-JUN 03, 2010 Chania, GREECE  
   Journal: ULTRASONICS SONOCHEMISTRY  Volume 18  Issue 4  Pages 853-863  Published: JUL 2011  
   Article type: Article

3. Title: Imaging modes for potential mapping in semiconductor devices by electron holography with improved lateral resolution  
   Conference: 12th Meeting of the European-Society-of-Sonochemistry, MAY 30-JUN 03, 2010 Chania, GREECE  
   Journal: ULTRAMICROSCOPY  Volume 111  Issue 4  Pages 290-302  Published: MAR 2011  
   Article type: Article
给检索词加双引号，缩小检索范围

示例："marine oil spill"
示例：oil spill* Mediterranean

示例：Cancer OR Journal of Cancer Research and Clinical Oncology

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1. 标题：Gold nano-islands on FTO as plasmonic nanostructures for bio-sensors
   来源：Nanotechnology 2014, 25(32), 325701-325709
   引用数：0

2. 标题：One-dimensional sub-10-um hard X-ray focusing using laterally graded multilayer mirror
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3. 标题：Submm accuracy metrology for ultra-precise reflective X-ray optics
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按学科类别排序，了解该研究涉及了哪些研究领域。
按机构名称排序，了解有哪些机构在从事这项研究
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<td>JOURNAL OF APPLIED PHYSICS</td>
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1. 标题: Sub-diffraction-limited optical imaging with a silver superlens
   来源: SCIENCE 308 575 2005
   摘要: Apr 22 2005

2. 标题: Nanosphere lithography: A versatile nanofabrication tool for studies of size-dependent nanoparticle optics
   作者: Hayes CL, Van Duyne RP
   来源: JOURNAL OF PHYSICAL CHEMISTRY B 105 21 5509-5611
   摘要: Jun 21 2001

3. 标题: A nanoscale optical biosensor: Sensitivity and selectivity of an approach based on the localized surface plasmon resonance spectroscopy of triangular silver nanoparticles
   作者: Hara AJ, Van Duyne RP
   来源: JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 124 35 10596-10604
   摘要: Sep 7 2002

4. 标题: Plasmonics - A route to nanoscale optical devices
   来源: ADVANCED MATERIALS 13 19 1501-1503
   摘要: Oct 2 2001

5. 标题: Biosensing with plasmonic nanosensors
   作者: Anker JN, Hall WP, Landers Q, et al.
   来源: NATURE MATERIALS 7 6 442-453
   摘要: Jun 2008
Biosensing with plasmonic nanosensors

Authors: Anker JN, Anker, Jeffrey HJ, Hall WP, Hall, W, Fagan, Lyandres D, Lyandres, Olga, Shah NC, Shah, N, Nirmal C, Zhao J, Zhao, Jing, Van Duynne DP, Van Duynne, Richard P.

Journal: NATURE MATERIALS
Volume: 7
Issue: 6
Pages: 442-453
Year: 2008

Abstract: Recent developments have greatly improved the sensitivity of optical sensors based on metal nanoparticle arrays and single nanoparticles. We introduce the concept of localized surface plasmon resonance (LSPR) sensing and describe how it is achieved by using size, shape and environment to independently detect molecular binding events and changes in molecular conformation. We then describe recent progress in three areas representing the most significant challenges: pushing sensitivity towards the single-molecule detection limit, combining LSPR with complementary molecular identification techniques such as surface-enhanced Raman spectroscopy, and practical development of sensors and instrumentation for routine use and high-throughput detection. This review highlights several exceptionally promising research directions and discusses how diverse applications of plasmonic nanoparticles can be integrated into the near future.

Keywords: Review

Language: English

KeyWords Plus: ENHANCED RAMAN SPECTROSCOPY, SELF-ASSEMBLED MONOLAYERS, NANOSCALE OPTICAL BIOSENSOR, SINGLE SILVER NANOPARTICLES, DESORPTION ELECTRON MICROSCOPY (SEEM), ELECTRON MICROSCOPY (SEM), ELECTRON BEAM LITHOGRAPHY, RANGE DEPENDENCE, DETECTION.

Address: Anker, JN, Northwestern Univ, Dept Chem, 2145 Sheridan Rd, Evanston, IL 60208 USA.
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Biosensing with plasmonic nanosensors

Recent advancements have greatly improved the sensitivity of optical sensors based on metal nanoparticles and simple nanospheres. We introduce the localized surface plasmon resonance (LSPR) sensor and describe how it can be employed to detect molecular binding events and changes in molecular conformation. We then describe recent progress in these areas representing the most significant challenges.

Key Words: Plasmonic nanosensors

References:
2. AARON J. Increased optical contrast in imaging of epidermal growth factor receptor using magnetically actuated gold/silica oxide nanoparticles. OPTICS EXPRESS 14: 12930-2006
3. ADAMIA A. Targeted gold nanorod contrast agent for prostate cancer detection by photothermal imaging. JOURNAL OF APPLIED PHYSICS 102: 084301 2007
4. ALTETALR A. Toward biomaterial surface imaging of cells and tissue by SMS and MALDI mass spectrometry. ANALYTICAL CHEMISTRY 70: 734 D010-1021A05131111 2008
5. AARON J. SILICON COMPOUNDS REF: 58 1991
6. AARON J. Enhanced ratiometric fluorescence sensing using SNAP-L2:3D on silica film: Metal enhanced fluorescence sensing. JOURNAL OF FLUORESCENCE 15: 37 D010-1009561685-695-6211-3 2005
7. AARON J. The promise of plasmonics. ADVANCED OPTICAL MATERIALS 1: 9 2013
Biosensing with plasmonic nanosensors

Authors: Anker JD, Ginder JF, Halil WP, Lyandres O

Abstract: Recent developments have greatly improved the sensitivity of optical sensors based on metal nanoparticle arrays and single nanoparticles. We introduce the localized surface plasmon resonance (LSPR) sensor and describe how its exquisite sensitivity to size, shape, and environment can be harnessed to detect molecular binding events and changes in molecular conformation. We then describe recent progress in these areas representing the most significant challenges: placing sensitive towards the single-molecule detection limit, combining LSPR with complementary molecular identification techniques such as surface...

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2. Nanostructured plasmonic sensors
3. Gold Nanoparticles: From Synthesis and Properties to Biological and Biomedical Applications
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Cites in 2009 to articles published in: 2008 = 2889  Number of articles published in: 2008 = 129  
2007 = 4941  2007 = 133  
Sum: 7730  Sum: 262  
Calculation: Cites to recent articles 7730 / Number of recent articles 262 = **29.504**

### 2008 Impact Factor

Cites in 2008 to articles published in: 2007 = 3277  Number of articles published in: 2007 = 133  
2006 = 3015  2006 = 133  
Sum: 6292  Sum: 272  
Calculation: Cites to recent articles 6292 / Number of recent articles 272 = **23.132**

### 2007 Impact Factor

Cites in 2007 to articles published in: 2006 = 2102  Number of articles published in: 2006 = 133  
2005 = 3338  2005 = 133  
Sum: 5440  Sum: 275  
Calculation: Cites to recent articles 5440 / Number of recent articles 275 = **19.782**

### 2006 Impact Factor

Cites in 2006 to articles published in: 2005 = 2356  Number of articles published in: 2005 = 133  
2004 = 2786  2004 = 133  
Sum: 5142  Sum: 268  
Calculation: Cites to recent articles 5142 / Number of recent articles 268 = **19.224**
Biosensing with plasmonic nanosensors

Recent developments have greatly improved the sensitivity of optical sensors based on metal nanoparticle arrays and single nanoparticles. We introduce the localized surface plasmon resonance (LSPR) sensor and describe how it enables sensitivity to size, shape and environment can be homogenized to detect molecular binding events and changes in molecular conformation. We then describe recent progress in three areas representing the most significant challenges: pushing sensitivity towards the single-molecule detection limit, combining LSPR with complementary molecular identification techniques such as surface-enhanced Raman spectroscopy, and practical development of sensors and instrumentation for routine use and high-throughput collection. This review highlights several exceptionally promising research directions and discusses how state-of-the-art applications of plasmonic nanosensors can be integrated in the near future.

Key Words: Plasmonic Nanosensors, Biosensors, Surface-Enhanced Raman Spectroscopy, Interaction Analysis
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<tr>
<th>Author(s)</th>
<th>Title</th>
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<tr>
<td>Gautrot, JE</td>
<td>Protein-Resistant NTA-Functionalized Polymer Brushes for Selective and Stable Immobilization of Histidine-Tagged Proteins</td>
<td>\textit{Bioconjunctiv. Appl. Interfaces}</td>
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<td>Fan, MK</td>
<td>Silver Nanoparticles on a Plastic Platform for Localized Surface Plasmon Resonance Biosensing</td>
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<td>Mahanty, P</td>
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**Title**: On the chemical bonding effects in the Raman response of benzene and its clusters on silver clusters

**Authors**: Sairam, SK; Olivares-Armas, R; Rappaport, D...

**Journal**: Physical Chemistry Chemical Physics

**Volume**: 11

**Issue**: 1

**Pages**: 941-9411

**DOI**: 10.1039/B005861A

**Language**: English

**Country**: USA

**Institution**: Harvard University