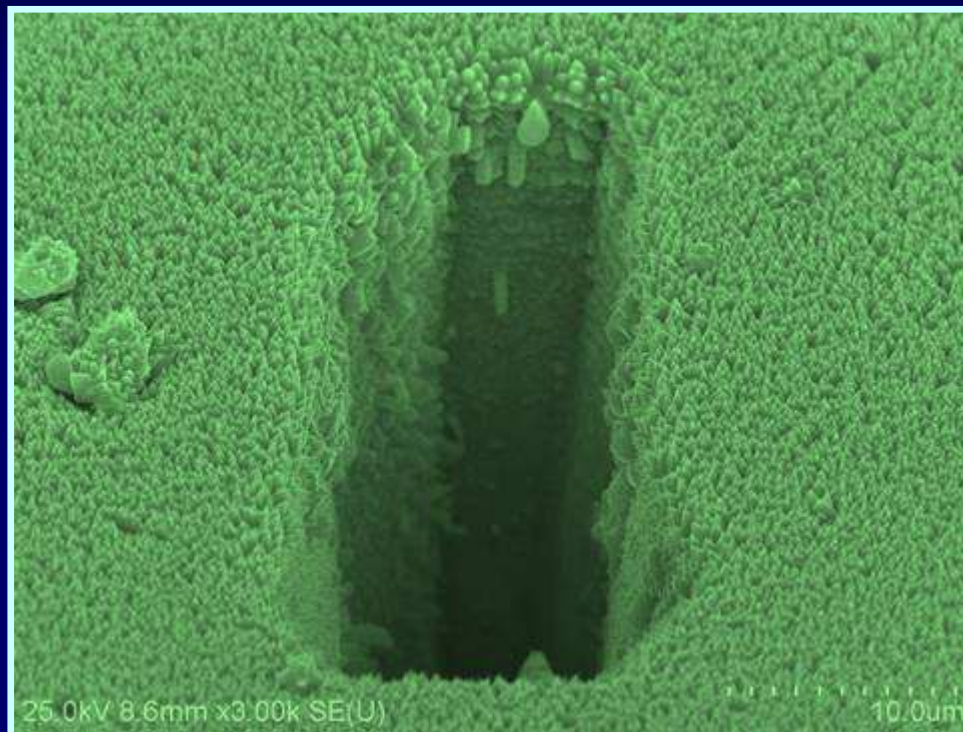




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Les Nanotechnologies au service des Cleantech

V. E. Sandana, D. Rogers et F. Hosseini Teherani

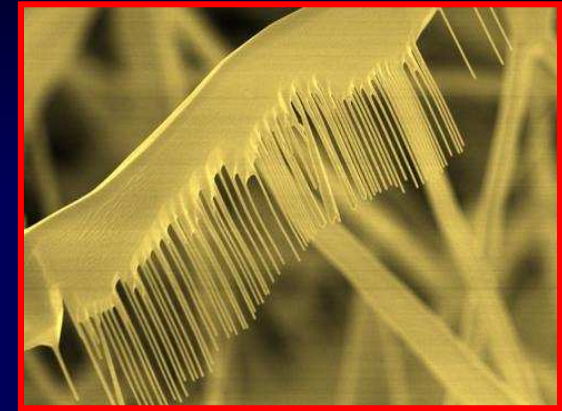


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17 Novembre 2009



1. **Nanovation**
2. **Qu'est-ce que c'est la nanotechnologie?**
3. **A quoi sert la nanotechnologie?**
4. **Le Nano ZnO**
5. **Les différentes formes de ZnO**
6. **Applications des Nano ZnO**
7. **Conclusion**



1. Nanovation



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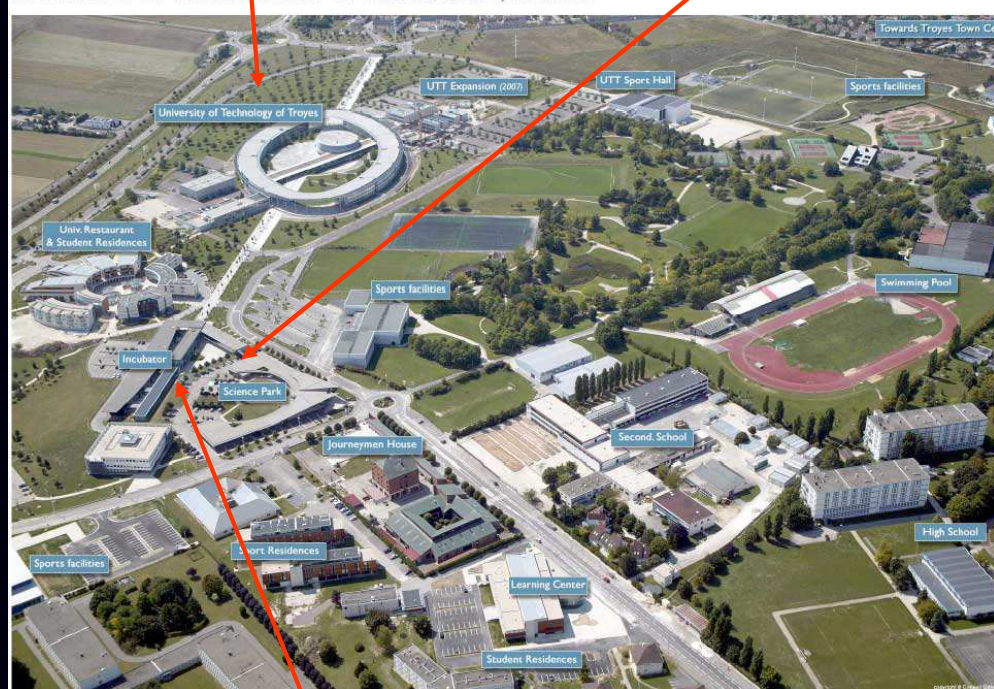


2005: Centre Technique → Troyes

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UNIVERSITY OF TECHNOLOGY OF TROYES AREA, FRANCE

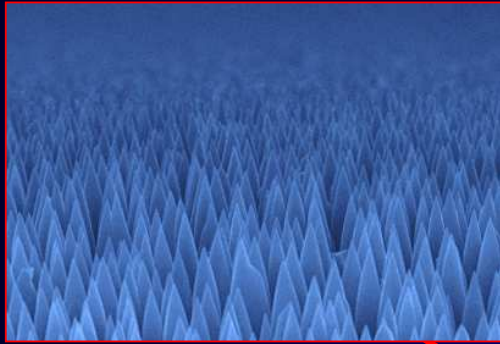


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Produits: Zinc Oxide (ZnO) Epiwafers





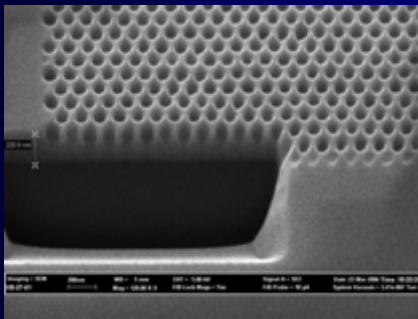
Nanostructures



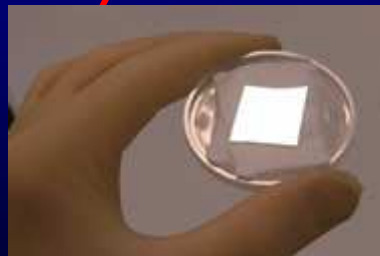
SAW Filters



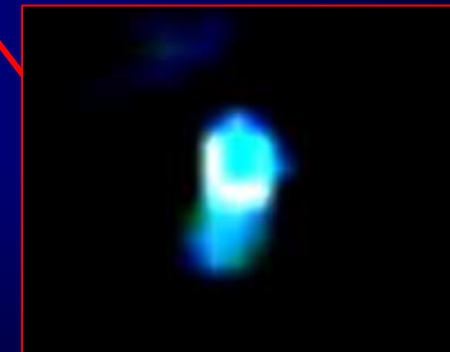
Electronique
Transparent



Cristaux Photoniques



Photovoltaique



LEDs



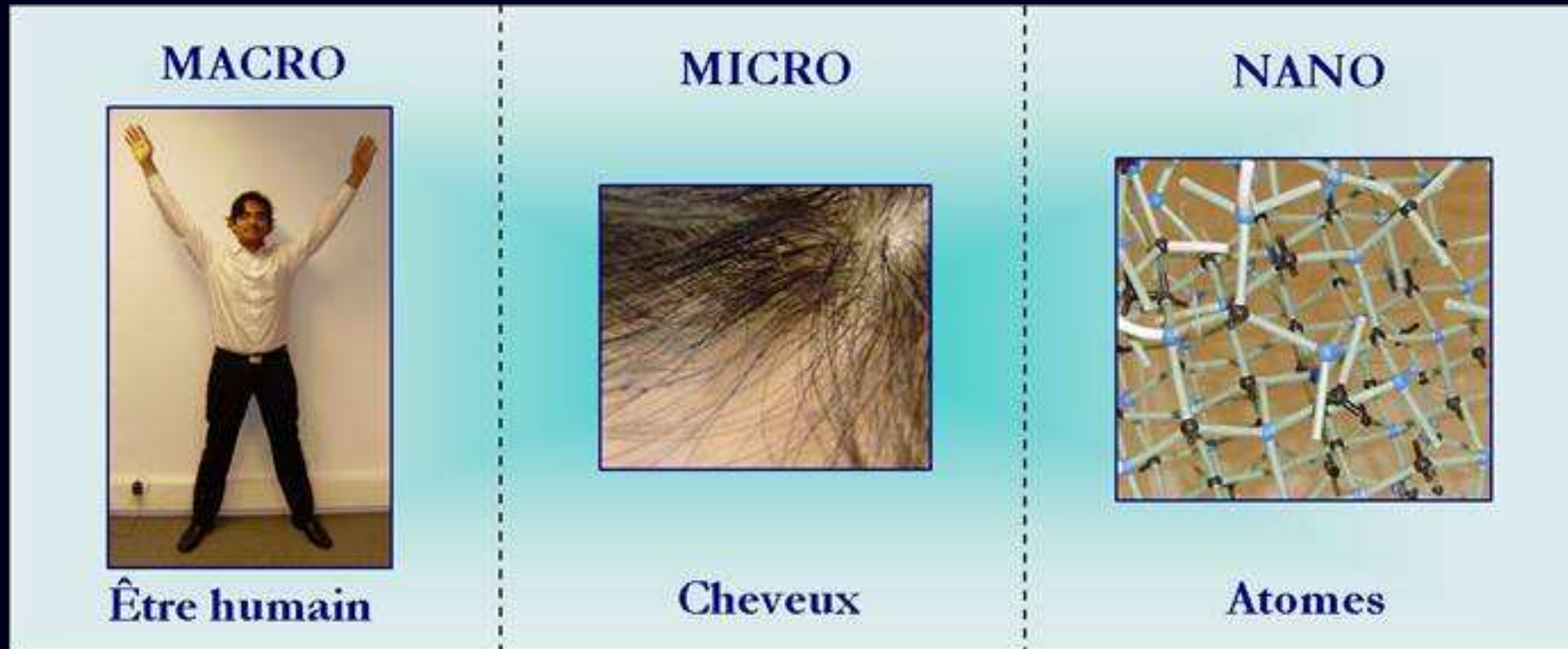
17 Novembre 2009



2. Qu'est-ce que c'est la nanotechnologie

Qu'est-ce que c'est la nanotechnologie?

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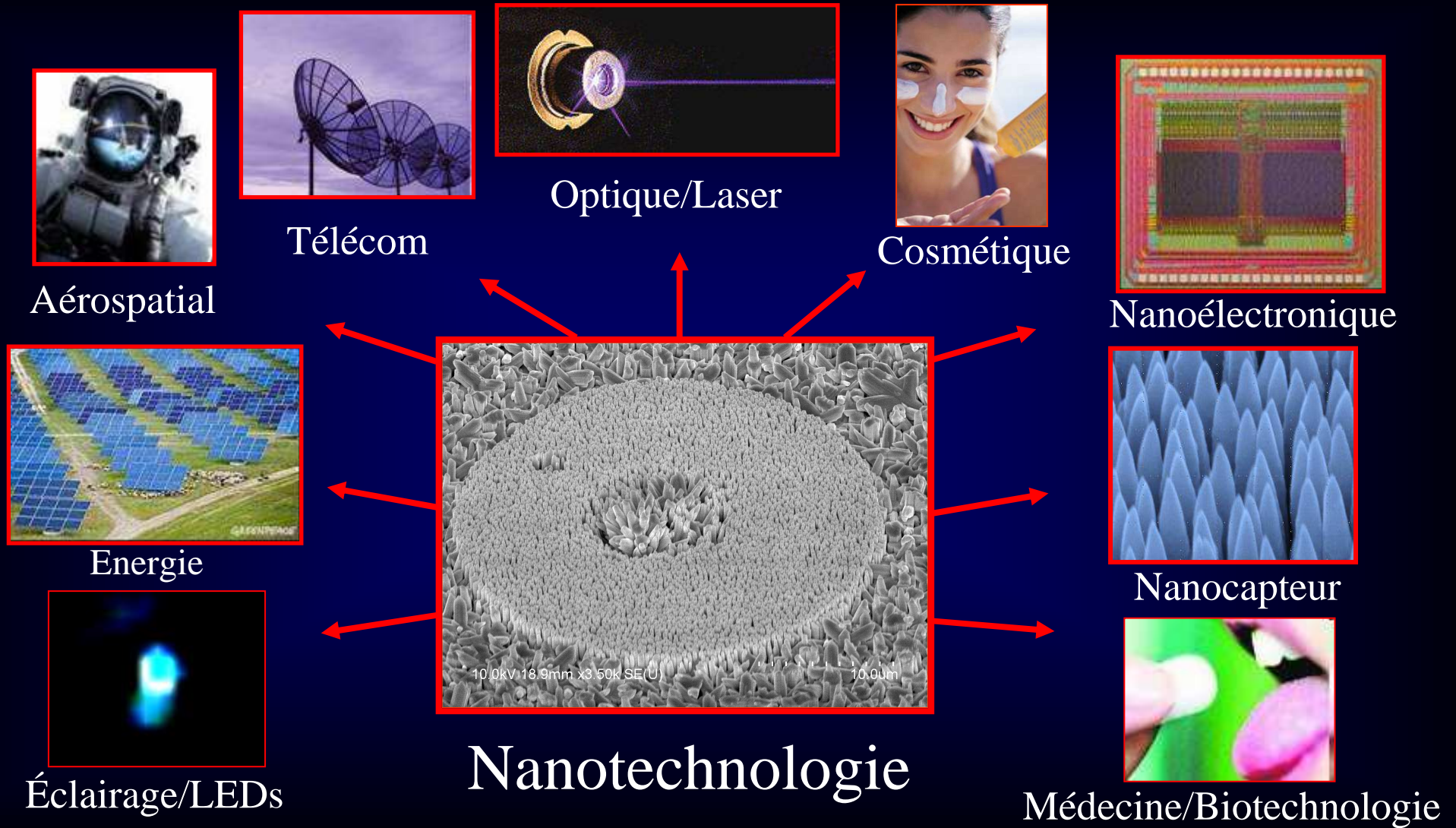


Changement d'échelle → Changement de Propriété

3. A Quoi Sert la Nanotechnologie?

A quoi sert la nanotechnologie?

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6. Applications Des Nano-ZnO

ZnO Electronics Market

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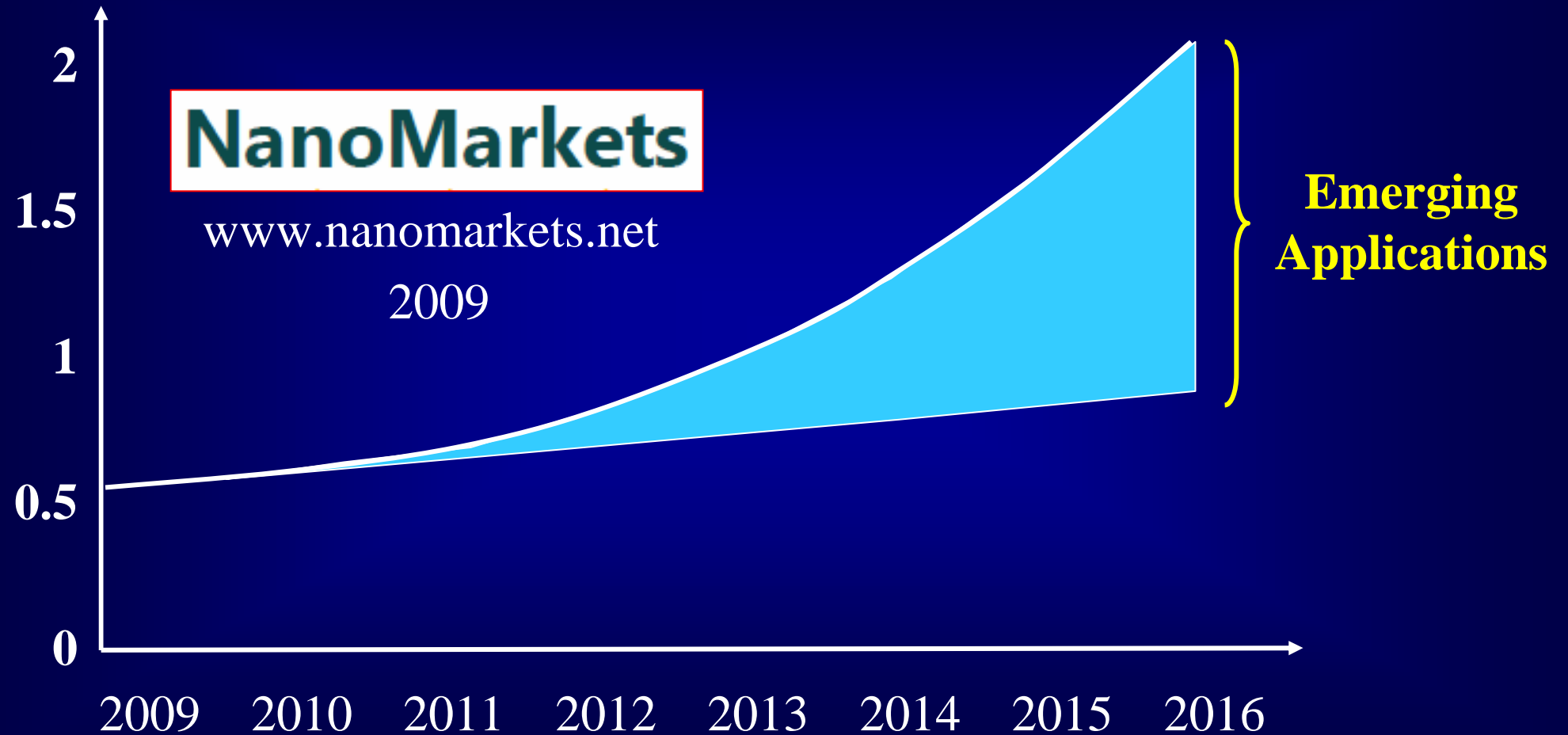
Billions \$



ZnO Electronics Market

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Billions \$



4 Key Emerging Applications

Light-Emitting Diodes (LEDs)

Displays

Photovoltaics

Sensors (Gas, UV & Bio)

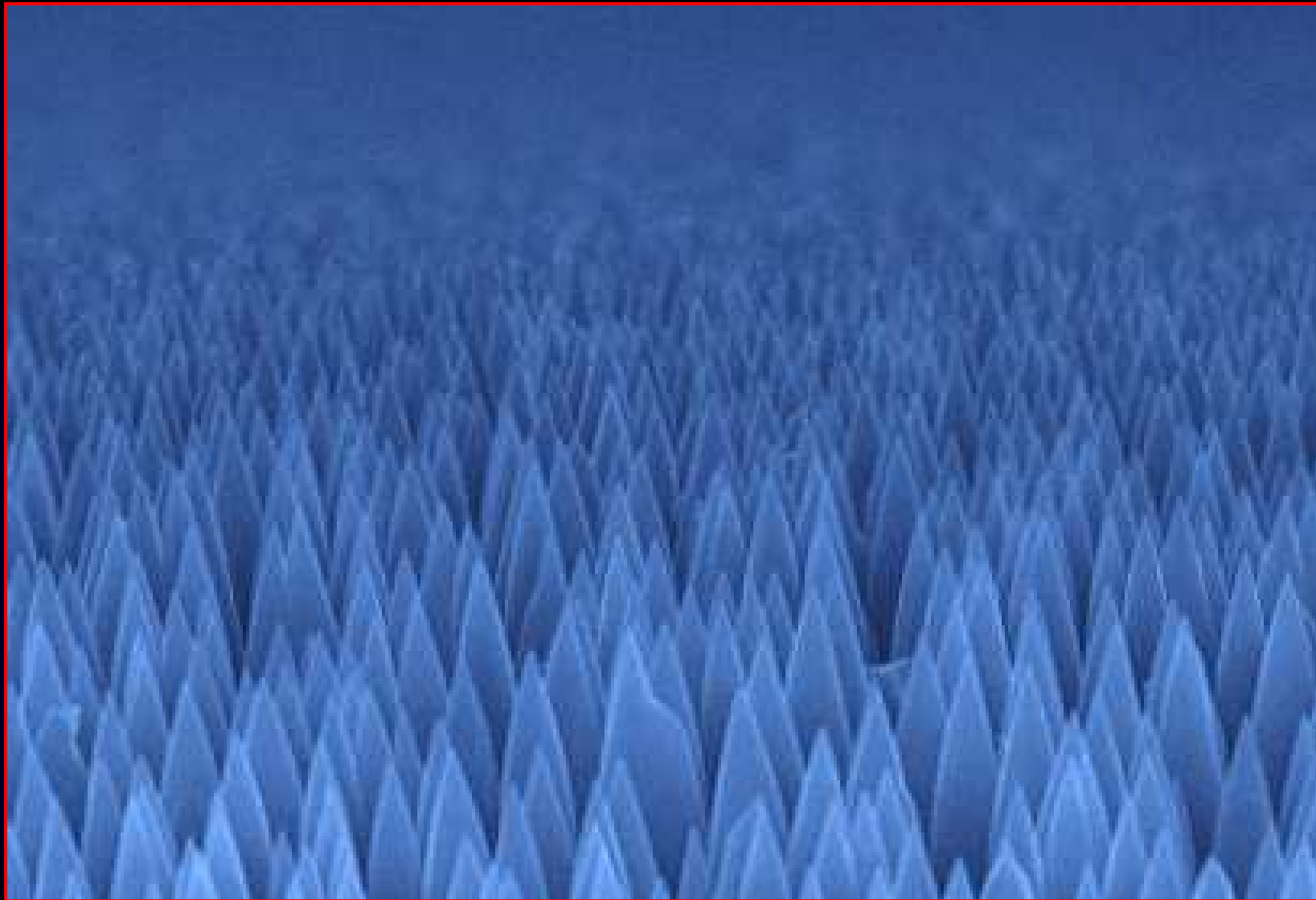
NanoMarkets

www.nanomarkets.net

2009

Applications Des Nano-ZnO : *L'éclairage*

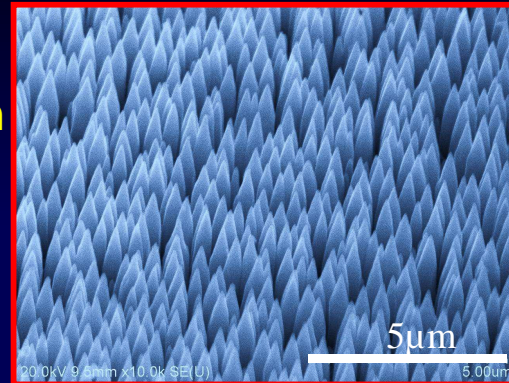




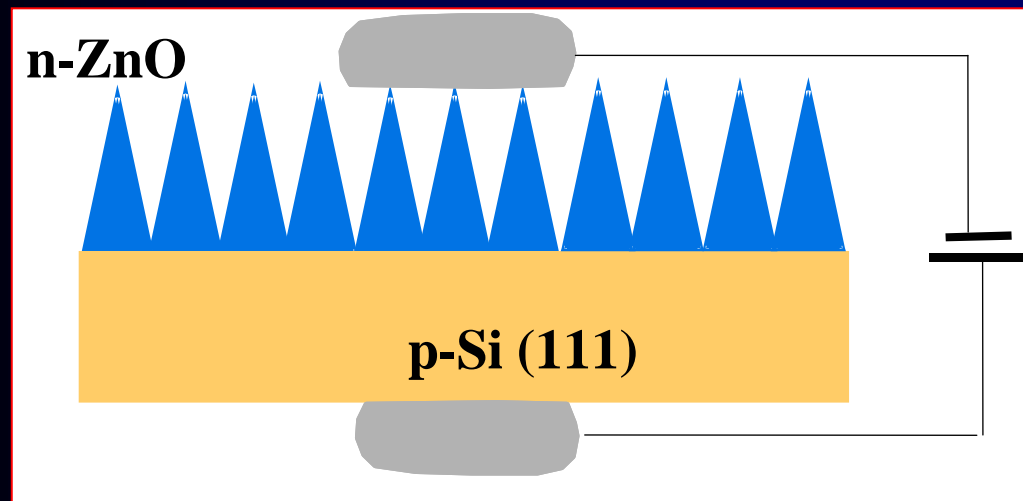
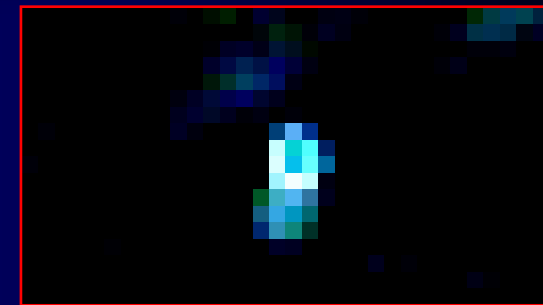
Nano LED à base de nanocones de ZnO

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Pour améliorer l'extraction
Texturation de surface:
Nano-cones



Electroluminescence

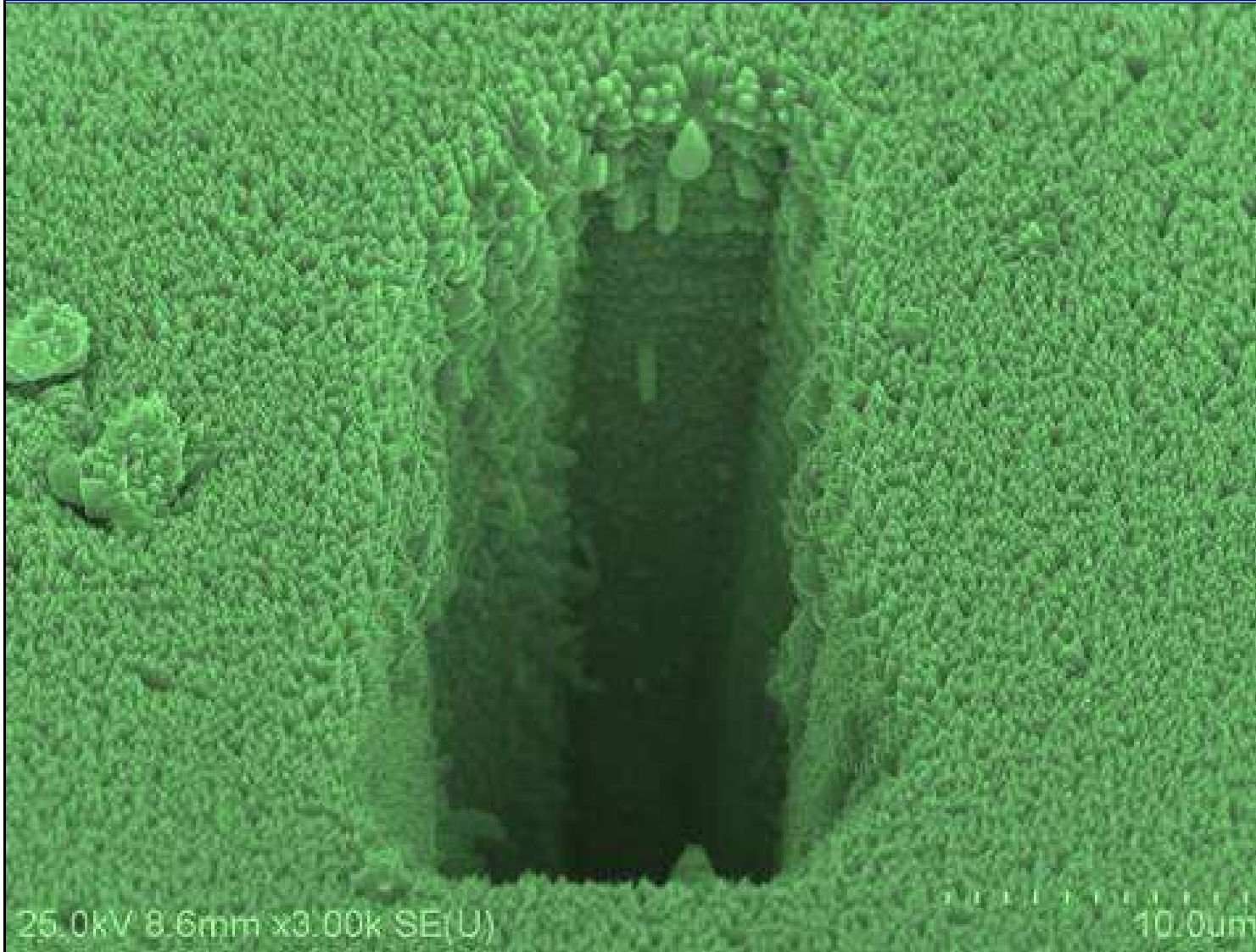


Lumière Bleuté

*D.J. Rogers, V.E. Sandana, F.H. Teherani, M. Razeghi, H.J. Drouhin
Proceedings of the SPIE,
Volume 7217, 721708 (2009).*

Applications Des Nano-ZnO : L'Énergie

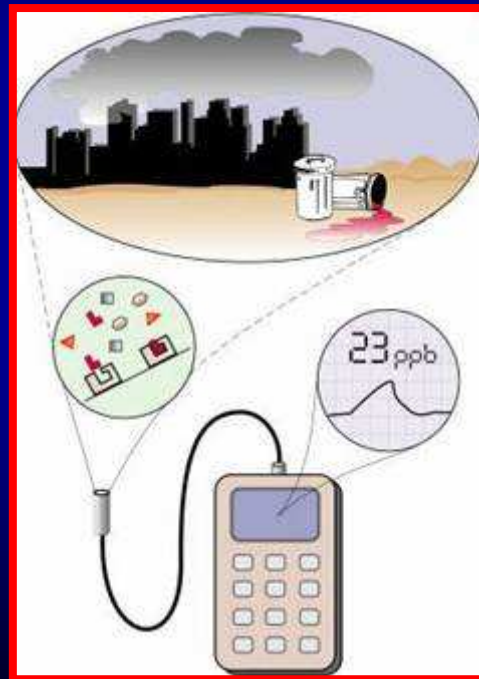


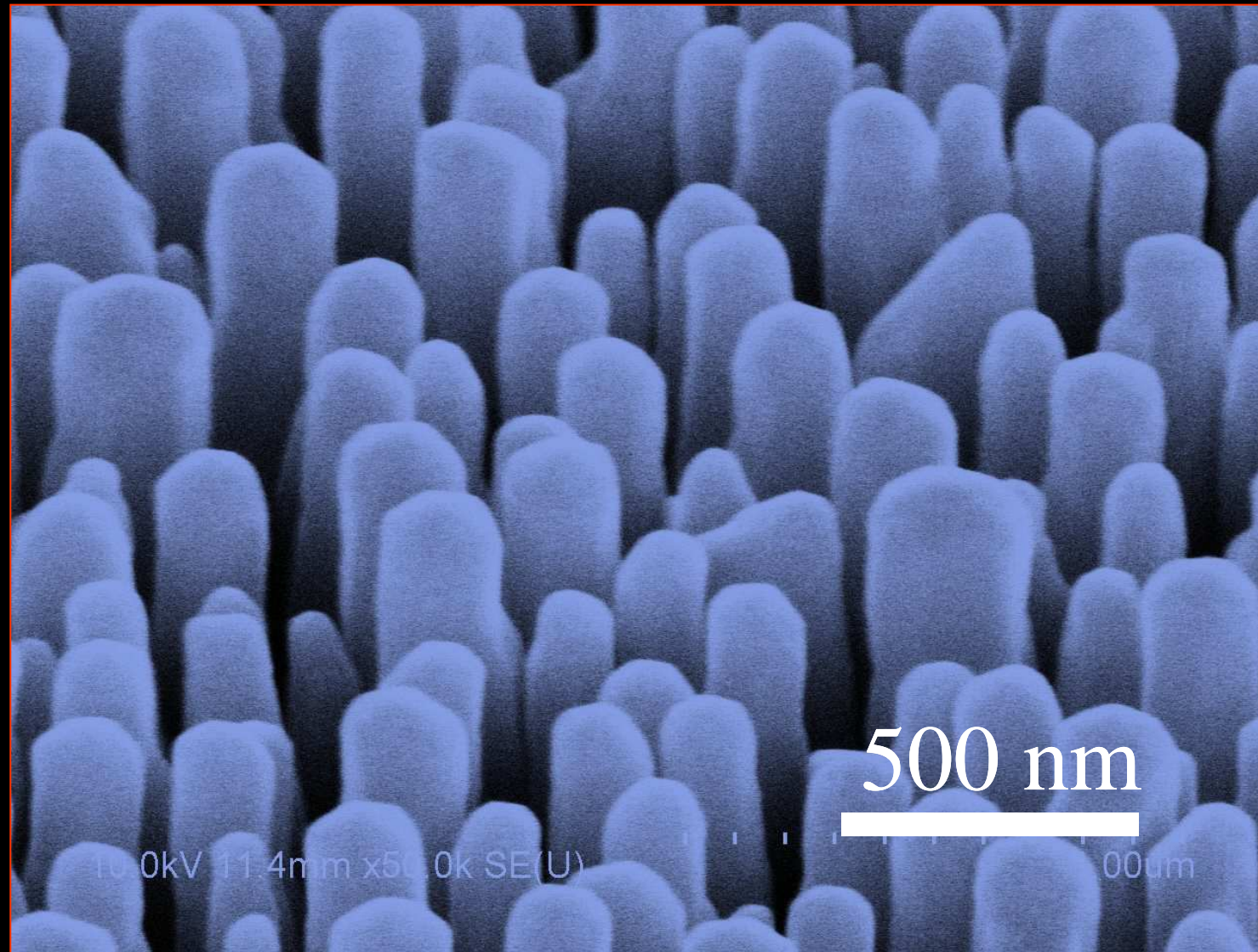


Augmenter
la lumière piégé
dans les panneaux
solaires

Applications Des Nano-ZnO :

Les Nanocapteurs



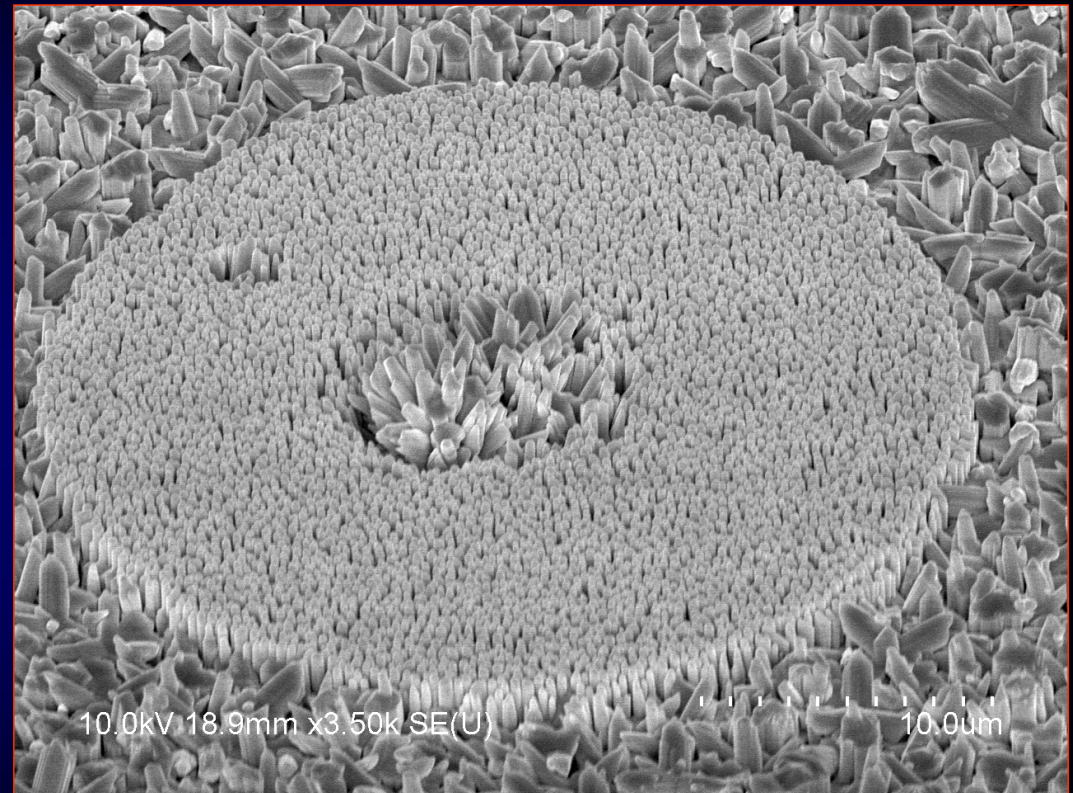


Augmentation
de la surface
de captation

7. Conclusion

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- 1) Nous sommes au début d'une nouvelle ère
- 2) Les Nanotechnologies concernent tous les champs d'application technique et industriel
- 3) Enjeux Economiques majeurs:
 - Nano-Biotechnologie
 - Nanoélectronique
 - Nanomatériaux
- 4) Enjeux Environnementaux:
Développement de nouvelle source d'énergie

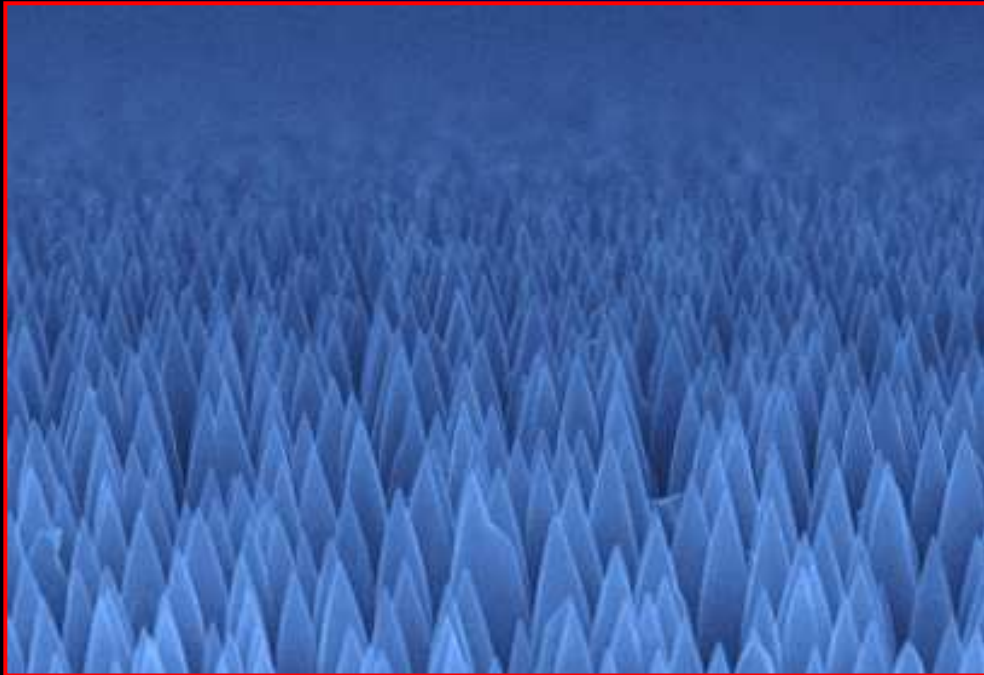


Remerciements...

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MERCI!



Pour plus d'information:

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