

How Silver Nanorods Can Prevent Foodborne Illness

PROBLEM

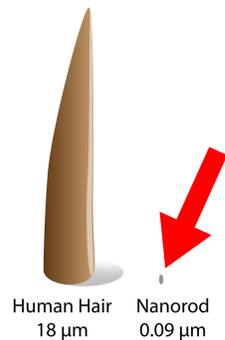
Foodborne illness in the US costs \$152 billion annually in health related expenses



References:
Pew Charitable Trusts and Georgetown University, <http://www.reuters.com/article/idUSTR6220NO20100303>
Centers for Disease Control, http://eatdrinkandbe.org/article/index.0331_fs_producereport

WHY SILVER NANORODS?

Nanorods are tiny molecules, even smaller than a single hair:



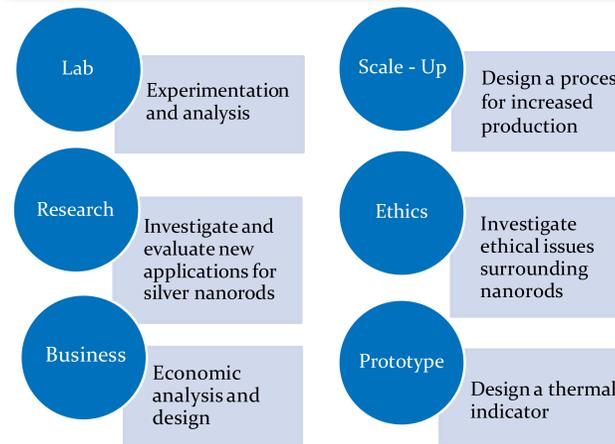
They are also capable of changing color over temperature and time.



OBJECTIVES

- Improve procedure for optimal production
- Evaluate risks and concerns of using nanorods
- Design and construct a working prototype
- Modify laboratory protocol for continuous production
- Evaluate the cost of production for comparison with competitors

METHODOLOGY

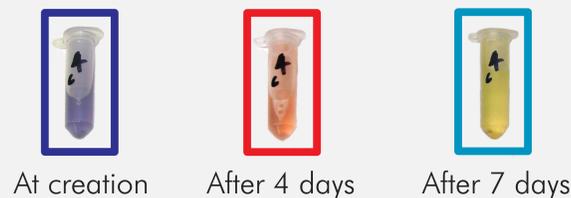
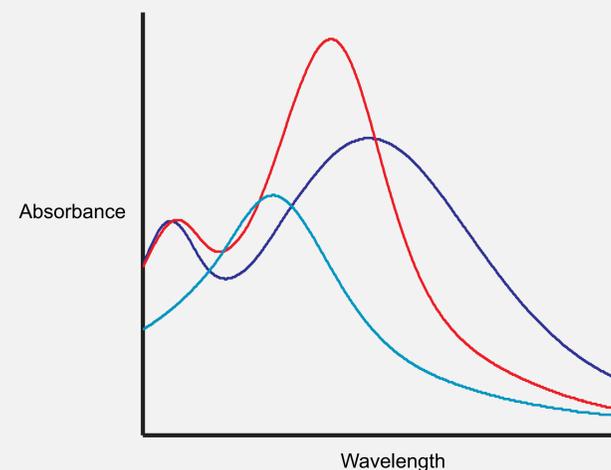


CONCLUSIONS

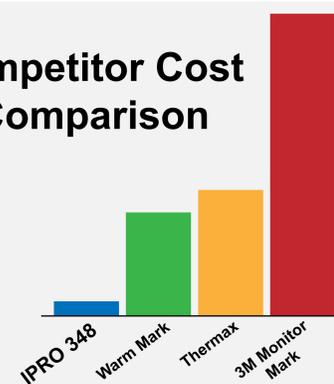
- It is possible to make silver nanorods and control the quality, time and concentration properties
- Nanorod labels are competitive in market applications
 - Future applications
 - Mass production
 - Ethical considerations incorporated
- Quantitative quality control addressed

RESULTS

Spectroscopic Analysis



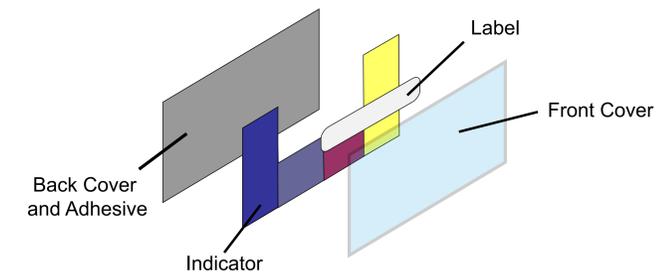
Competitor Cost Comparison



Nanorod Label Cost



Nanorod Label Prototype



FUTURE WORK

- Continued lab research and scale-up design
- Enhance label design
- Test toxicity and disposal
- Market research
- Improve viability of existing prototype

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IIT IPRO Office