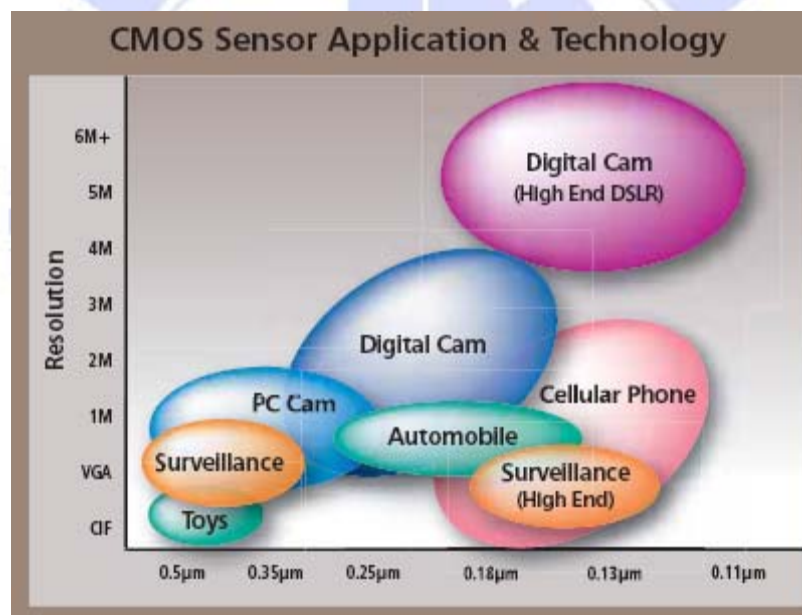


## Chapter 5 Conclusion

### 5.1 Conclusion

The thesis base on the CMOS image sensor design method, considering the defects and characteristic on automotive application, we've successfully devised, simulated and implemented the CMOS image sensor SMART809. Since the electrical devices and algorithms which base on vehicles safety concept has been incorporated into the emphases national technology research target. No longer examine images by human's eyes; the intelligent vision would be more and more popular in the future days. Our research brings the different angle on Image Sensor's design and hope these efforts may help human beings on their safety. It should be our engineers' responsibility, isn't it?

### 5.2 Future Work



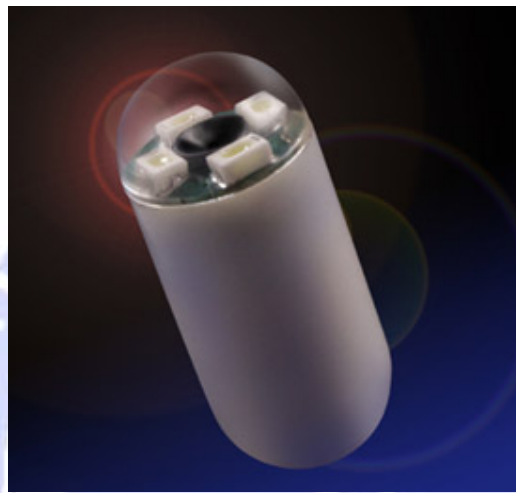
**Fig. 5.2-1 CMOS Sensor Application & Technology**

*extracted TSMC CMOS Image Sensor Technology Information Document [18]*

While the technology gets lower size and integrated more the circuits, it seems that the resolution and chip size issue are not longer important than before. Application seems that become the target whether in academic or in industry field. Fig. 5.2-1 is TSMC CMOS Image sensor technology and application diagram. For example, the video camera on high end type is quite different one in PC Cam application on resolution issue. Future more, integrated Sensor SoC has been implemented, integrated with several processing circuits for certain application like compression. How to make

the sensor smarter will be the goal in the future research.

On the other application's view, biomedical always be the most interesting field to search. The successful product called "Capsule Endoscopy" ( Fig.5.2-2 ( a ) ) , which be published on Nature 2000( pp. 405-417 ),by GIVEN (GastroIntestinal Video ENdoscOPY) Ltd.. It successfully integrates lens, image sensors, batteries, ASIC transmitter, and antenna into one pill size capsule ( Fig. 5.2-2 ( b ) ) . Such kinds research of Biomedical Wireless Sensor Network ( Bio-WSN ) are popular in recent years.



( a )



( b )

**Fig. 5.2-2 Capsule Endoscopy ( a ) Outlook ( b ) Architecture**  
*extracted MAYO Clinic Inc. " Capsule Endoscopy", MAYO Clinic Medical Service < 9 >*