INTRODUCTION

In recent years, underwater communication has become an active research area as there is still a big gap in the field of... 

Communication is the most important process in underwater technology. The process enables the data transfer between... 

SOURCES OF PROBLEMS

As for terrestrial application, the underwater wireless communication is not a straightforward process. Why? 

1 Characteristics of signal carrier
In underwater world, there are 3 types of carrier wave that are most commonly used in wireless communication... 

i. Electromagnetic wave
Using electromagnetic wave, the communication can be established at higher frequency and bandwidth. 

ii. Optical wave
Optical wave also offers high data rate transmission. Nevertheless, the signal is rapidly absorbed in water... 

iii. Acoustic wave
Acoustic is the most preferred signal used as carrier by many application, owing to its low absorption characteristic...
2 Environment/Propagation Medium
Unlike the communication in terrestrial application, for underwater wave propagation, the challenges are quite different. Common terrestrial phenomena like scattering, reflection, refraction also occurs underwater communication.

3 Instrumentation System Devices.
In ensuring the effective underwater communication, the communication system design plays a vital role. Factors such as the instrument and system parameters are very important. One of the effective approaches is by implementing a modem. It is found to have many advantages compared to the conventional approach [7].

RECENT PROGRESS: INSTRUMENTATION ASPECTS
Although the complete system for underwater communication has been around throughout various applications, nevertheless, the modem has always changed rapidly. Researchers are competing in developing a better system with better performance.

One example is an effort carried out by a group of researchers from Micro and Nanotechnology lab, University of Illinois. It is found to be used underwater. Its operation has been tested in two different applications to verify its functionality [6].

In instrumentation system point of view, power consumption becomes one of the main concerns when developing a complete system. Researchers have been considering the relationship between several important parameters such as attenuation, distance, frequencies and transmission loss.

MEMS APPROACH

In today’s world, many electronic devices are designed to be small. In most cases, small devices offer several advantages.

However, the realisation of MEMS in underwater communication especially in sensor design could be a worth effort to be implemented. The significance of this effort has been reviewed in [7].

Reduction in size has offered a lot of advantages in terms of its power consumption, portability, production and cost. It can be thought of as a new research area that require an extensive study and could contribute to many novel outcome.

Until now, most of the application that utilize this approach mainly focuses in imaging industries owing to the fact that this type of sensor can offer a high bandwidth and sensitivity [9].

Aside from imaging, MEMS based sensor is also thought to be worthwhile if it can also be implemented for communication purposes, specifically for underwater.
REFERENCES


