PLENARY SESSION - II

A-WED-08

RECENT TREND IN SEMICONDUCTOR PACKAGING MATERIALS,

IN KIL HWANG, (President of Anam Semiconductor, Inc., 280-8, 2ga, Sungsu-dong, Sungdong-gu, Seoul, Korea)

Electronic packaging has been defined to be a mechanical protection of semiconductor while its electrical signal is interconnected to a controllable outside medium. For last five decades the technology has experienced a very steady improvement as opposed to IC fabrication technology. Even though the change was gradual and stable, significant technology milestones have been witnessed as IC and system get complicated. Change from ceramic to plastic package indeed is one of the most significant contributors in achieving affordable electronics products both in price and in weight.

Todays packaging technology, however, faces a new challenge to address the electronics ever increasing demand of loss-less and weight-less interconnection. Also the desire to get more and better functions in a smaller and cheaper electronics in a short time makes the packaging methodology move from a single IC interconnecting toward a system partitioning technology. These changes necessarily result in a very aggressive research and development of new advanced materials for packaging. The trends of these material development activities, and resulting package future look will be discussed in this talk.

A-WED-09

INSTABILITIES OF INTERFACES OF SiGe ALLOYS,

Robert J. Nemanich, David Aldrich, Boyan Boyanov, Peter Goeller and Dale E. Sayers (Dept. of Physics and Department of Materials Science and Engineering, North Carolina State University, Raleigh, North Carolina 27695-8202)

SiGe alloys hold potential for a wide range of electronic and optoelectronic applications. In particular, epitaxial films grown on Si substrates allow bandgap engineering to tailor the electronic and optical properties. While silicon and germanium exhibit the same crystal structure and similar atomic bonding, and SiGe alloys form a continuous solid solution over the whole composition range, the theme of this presentation will be unanticipated instabilities of interfaces of SiGe alloys. In particular, the interface reactions of Ti or Co with SiGe is described. While reaction of Ti or Co with Si are known to form stable silicide interfaces, experimental results are presented which show that this is not the case for reactions with SiGe alloys. A model is presented which is based on thermodynamic properties but which also accounts for the interface properties. The examples presented here may effectively be a model system to describe interface instabilities of compound semiconductors.