

## PLENARY SESSION - I

## A-TUE-01

**GAIN, AMPLIFIED SPONTANEOUS EMISSION AND LASING IN SEMICONDUCTING POLYMERS,**

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Because of the high absorption coefficients, the high density of chromophores, and the Stokes-shifted luminescence, luminescent semiconducting polymers have potential as low threshold laser media. Optically pumped amplified spontaneous emission has been demonstrated in submicron films of  $\pi$ -conjugated polymers as the active materials. Resonant structures appropriate for photopumped lasers include microcavities, distributed feedback (DFB) substrates, and whispering gallery mode micro-discs and micro-rings. Photopumped stimulated emission and lasing have been observed in a growing number of highly luminescent polymers with emission wavelengths that span the visible spectrum. Progress in the areas of polymers lasers will be reviewed and the possibility of electrically pumped diode lasers (fabricated from semiconducting polymers) will be explored.

## A-TUE-02

**ECOMATERIALS DEVELOPMENT THROUGH IMPROVING ECO-EFFICIENCY,**

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As environmental problems have become increasingly serious worldwide, achieving a sustainable society has emerged as a global issue. In order to make this goal a reality, manufacturers and consumers should recognize that all the products and services we consider indispensable to our lives and economic activities entail a certain environmental burden, and that the concerted efforts of all should be to minimize this burden and to maximize the eco-efficiency of product or service. It was very remarkable that in Japan the Life Cycle Assessment Society of Japan (JLCA) and the Green Purchasing Network (GPN) were established 1995 and 1996, respectively. JLCA is supported by the Ministry of International Trade and Industry of Japan (MITI) and 22 major industrial sectors. JLCA is also running a national LCA project supported by MITI from this year on. GPN has been promoting the purchase of environmentally friendly products and services. Nearly 1000 major companies, 228 municipal governments and 179 environmental and consumer groups have joined, along with other assorted experts and the Japan Environmental Association and the Japan Environmental Agency. Ecodesign and ecomanufacturing for eco-efficiency in Japan is now being influenced and promoted by the market force or green purchasing power. The purpose of this paper is to review Design for Environment, Ecomaterials and the eco-efficiency achieved by the Japanese industries. I would like also to introduce some examples of Eco-intelligent products, Hybrid Car (TOYOTA), Portable Oscilloscope (YOKOGAWA), room Airconditioner (DAIKIN), Hz free pump (EBARA), Mg alloys (National.Panasonic), 100% Recyclable House (Misawa Home), Bullet Train (Japan Railway), Soil ceramics (INAX) etc.