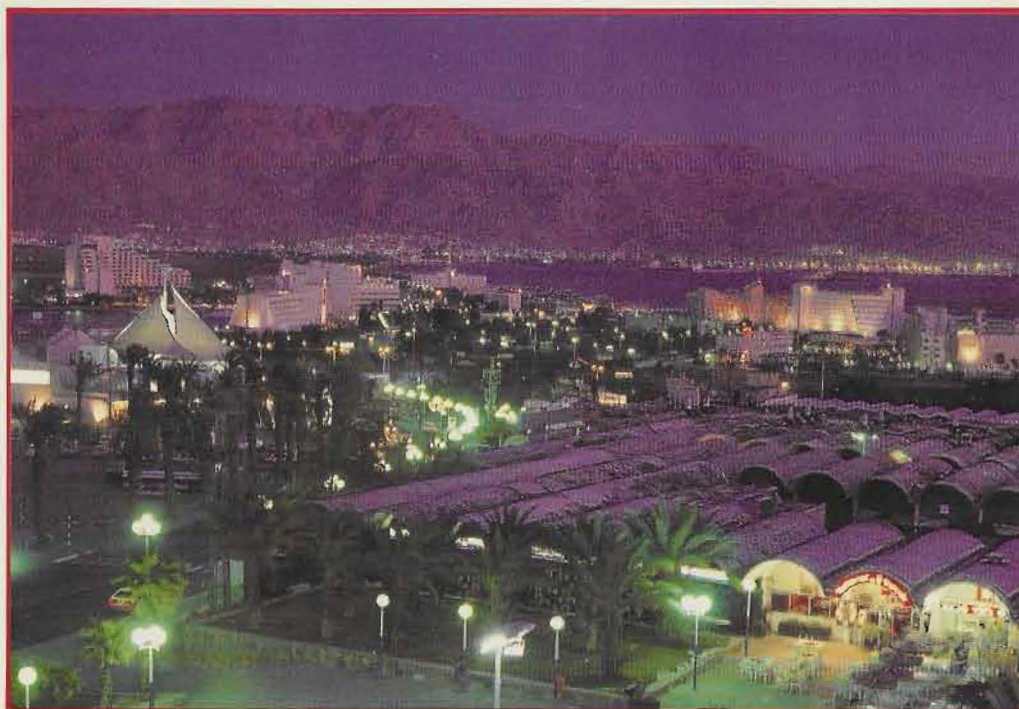


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MINISTRY OF SCIENCE AND TECHNOLOGY

SECOND INTERNATIONAL ISRAELI CONFERENCE  
on  
**"HIGH  $T_c$  SUPERCONDUCTIVITY"**



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## HIGH CURRENT COMPOSITE SUPERCONDUCTOR ELECTRICAL POWER LEAD

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A high current composite superconducting power lead has been constructed for transmitting currents of 100A from normal conducting leads at 60K to superconducting NbTi-Cu leads at 4K. The lead is composed of a number of potted parallel bulk YBCO superconducting elements. The lead has been tested for continuous operation at up to 150 amperes. The power dissipation of the lead is approximately 100 mW if the hot end is at 70K, 20mW if the hot end is at 60K and 2mW at 50K. It is estimated that the heat delivered to the 4.2K bath will result in a helium boiloff of 0.01 l/hr at full power. Lead power and total resistance have been obtained for various operating currents and temperatures. The lead has been thermally cycled numerous times and is found to be mechanically rugged and electrically reliable.

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