

NATURE OF NEGATIVE DIFFERENTIAL  
RESISTANCE OF GaP LIGHT DIODES

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S u m m a r y

We define experimentally the role of recombination and thermal mechanisms on appearing the negative differential resistance part in the current-voltage characteristics of light diodes, cooled up to the temperature of liquid nitrogen. For this purpose, the influence of a deep-level concentration change on the shape of  $I$ - $V$  curve under electron irradiation is studied. Measurements of the temperature of GaP light diodes as a function of voltage are carried out. A good correlation of temperature and current changes is observed. We conclude that deep levels in the depletion region of the  $p-n$  junction were the reason of appearing the S-region on current-voltage characteristics at the beginning stage. At the terminating stage, when the structure resistance is minimal, the influence of a temperature increase on the diode conductivity is essential.