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A study on the relationship between CCFL's characteristics and gas pressure TADAO UETSUKI, NAOKI AOYAMA, Tsuyama National college of Technology, YUJI TAKEDA, HIDETOSHI YANO, Harison Toshiba Lighting Corp., OSAMU FUKUMASA, Ube National College of Technology — A continuous improvement in the lumen output and efficacy of the cold cathode fluorescent lamps (CCFLs) used for the backlight of LC-TVs is always expected. The lumen output and efficacy can be improved by controlling the electric field intensity by changing gas pressure. Therefore it is very important to grasp the relationship between the CCFL's characteristics and gas pressure. The authors investigated the influence of gas pressure on the cathode fall voltage (CFV) and the electric field intensity of the positive column. The measurement results show mainly three points. The first is that the CFV of the Ne-Ar lamp reaches a minimum at 5.3kPa, while the CFVs of the Ne-Ar-Hg lamps decrease with a rise in gas pressure monotonously. This difference is caused by the variation of the sheath thickness arising from the presence of the mercury. The second point is that the CFV of the Ni-electrode lamp is higher than the Mo-electrode lamps' whether the mercury is present or not. This is caused by the difference of gamma coefficients between Ni and Mo. The third point is that the electric field strength increases with a rise in gas pressure whether the mercury is present or not. This is caused by the increase of the elastic collision loss between electrons and atoms.

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