

마이크로플라즈마 전류 스위치 및 응용

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A microplasma current switch (MPCS) for a device operated in a current mode like organic light-emitting diodes (OLEDs), which features matrix addressability and current switching, is presented as well as its architecture and operational principle. The MPCS utilizes the intrinsic memory and conductivity of plasmas to achieve matrix addressability and current switching.

We have fabricated a 100 mm x 100 mm MPCS panel in which its cell pitch is 1080 μm x 1080 μm . The matrix addressability and current switching were verified. In addition, the current-voltage (I-V) characteristic of the unit cell was measured when plasmas were ignited. In principle, the scheme of the MPCS is equivalent to that of a double Langmuir probe diagnosing plasma parameters except for their relative dimensions to a plasma volume. Accordingly, the I-V characteristic was analyzed by a double Langmuir probe theory, and the plasma density and electron temperature were estimated from the I-V curve using a collisional double Langmuir probe theory.