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Low-pressure indium-bromide discharges for sustainable lighting PETER VANKAN, Philips Lighting, PO Box 80020, 5600 JM, Eindhoven, The Netherlands, PIET ANTONIS, ARIEL DE GRAAF — Lighting up today's world requires massive amounts of energy: 20% of the world's electricity consumption is used for lighting, which illustrates nicely that energy efficiency is a key issue in sustainable lighting. Of all light produced, roughly half comes from low-pressure mercury vapour lamps. These lamps are limited to around 110 lm/W due to the Stokes-losses in the phosphor conversion. Therefore, to make a more energy efficient lamp, the mercury has to be replaced by another filling. This contribution will present a discharge based on indium-bromide that emits mainly in the UVA and visible region instead of the UVC, which strongly reduces the Stokes-losses and therefore offers the potential of a high energy efficiency. On top of that, the indiumbromide discharges are mercury-free, which gives an extra impulse for sustainable lighting. In this contribution we will show the indium-bromide discharge efficiency as a function of filling pressure and type of starting gas, diameter and coldest spot temperature. A maximum discharge efficiency of around 50% has been reached in a capacitively coupled lamp.

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