Chemical Transport in High Intensity Discharge Lamps

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Abstract

Electrical light plays an important role in our modern live. Lamps help people to be independent from the sun light. In addition to that energy saving plays in important role in many current discussions. One type of lamps with low energy consumption is the high intensity discharge type of lamps. The lamps have a so called burner, which can be made out of polycrystalline aluminium oxide (PCA). The burner can be destroyed by corrosive effects. These effects depend on the temperature, pressure and the filling materials inside the burner. The corrosion inside the lamp is calculated with SimuSage. These calculations show that the influence of the filling materials is complex and very sensitive. We hope to get a better understanding of the corrosive effects. With an influence on these effects we hope to extend the life time of these lamps. A longer life time would be economic for the consumer and so ecological, because such a lamp has 95lm/Watt in comparison to an electric bulb, which gives 15lm/Watt.