- figure 2/2 is an emission spectrum (photoluminescence PL vs. wavelength in nm) of this same silicate.

Prior art

JP 2003-206480 and the equivalent applications US 2004/0080271 or EP 1353354 disclose a plasma display device with spherical particles of blue-emitting phosphor with an average particle diameter ranging from 0.1 to 3.0 µm. It is not disclosed what type of average value is given. There is no disclosure of a suspension in an organic solvent nor of a stable suspension as claimed. The process involves spraying into a furnace heated at a temperature from 1000 to 1500°C. The temperature used in the process of JP 2003-206480 is much higher than the temperature used in the 2nd step of the process of the present invention.

EP 1589557 discloses particles of phosphor of a different chemical nature.

FR 2869159 discloses a LED emitting in the white with a 1st phosphor emitting in the blue and in the red and a 2nd phosphor emitting in the green. The 2nd phosphor can be a MSi_2O_5:Eu or $MSiO_4$:Eu (M= Ba or Sr). There is no reference of a suspension as claimed.

US 2007/0057618 discloses a silicate of formula $(Me_{1-y}\ Eu_y)_2\ SiO_4$ (Me= Ba, Sr, Ca or Mg). The phosphor as a grain size (distribution in volume) of from about 10 to 50 µm, so of a different size than the silicate according to the invention.

Summary

One aspect of the present disclosure relates to a silicate of magnesium and of at least one first element chosen from barium, strontium and calcium, characterized in that it is in the form of a suspension of solid crystallized particles in an organic solvent, said particles having a mean size between 0.1 µm and 1.0 µm.

Another aspect relates to process for producing a silicate as disclosed herein, characterized in that it comprises the following steps: a liquid mixture comprising compounds of magnesium, of silicium, of at least one first element chosen from barium, strontium and calcium and, possibly, of one second element, is formed; said mixture is spray-dried; the dried product is submitted to a first calcination in air and to a second calcination in a reducing atmosphere; a wet milling operation is carried out on the product after the calcinations.

Another aspect relates to a luminescent device, characterized in that it comprises, or in that it is manufactured from, a silicate as disclosed herein or a silicate obtained by the process as disclosed herein.

Definitions

The term "rare earth" is understood in the present description to mean elements of the group formed by yttrium and the elements of the Periodic Table with atomic numbers between 57 and 71 inclusive.

The mean size and other characteristics of the distribution of size of the particles are obtained by implementing the laser diffraction technique using a laser particle size analyzer. The distribution is given in volume. It can be obtained with a Malvern Mastersizer.

It is specified here that the measurements are performed on suspensions that have not suffered any settling, that is to say with no supernatant and no settled