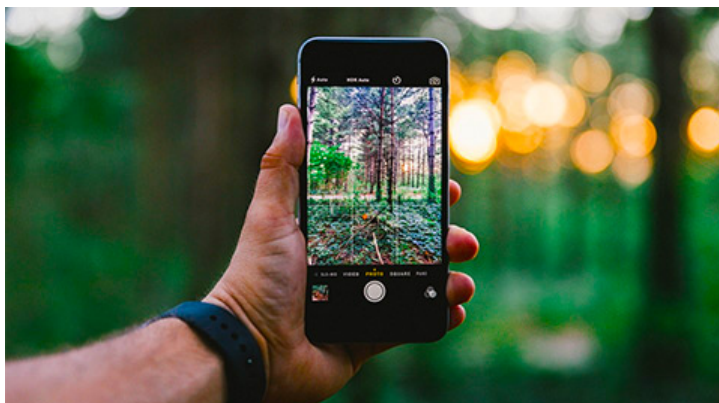


SibFU researchers participate in creation of "perfect green" for smartphone and TV screens

A research team from Siberian Federal University, Beijing University of Science, and Technology and South China University of Technology obtained a rare-earth silicate phosphor with exceptional properties — it emits an almost monochrome green color, which could be called "perfect green". This material is assumed to improve the color reproduction of the screens of all modern gadgets, especially televisions. Also, the finding will help improve the new generation of LED lamps.



'We were able to obtain phosphor using the solid-phase reaction method that emits a very pure green luminescence with an unusually narrow half-width of the spectral line (only 41 nm), that means that the color is almost monochromatic. Moreover, our phosphor is thermally stable — the luminescence almost does not change due to temperature fluctuations. It is also chemically stable, which is essential in screens and lamps production,'

said Professor **Maxim Molochev**, one of the authors of the work, an associate professor at the Department of Solid State Physics and Nanotechnology of Siberian Federal University, a senior researcher at the Kirensky Institute of Physics, Siberian branch of the Russian Academy of Sciences.

Researchers emphasize that color reproduction, which is as close to natural as possible, will be in demand in modern TVs. At present, the new material cannot be widely used in the manufacture of gadgets, since its light conversion efficiency is still small. However, other characteristics of "perfect green" are very impressive, which means that it is necessary to move on and explore similar compounds in order to get a breakthrough in color reproduction, and most importantly — to reduce the cost of televisions. After all, according to the researcher, the material obtained is very cheap, unlike those that are now used by video equipment manufacturers.

'We can use the new phosphor for LEDs and in any devices where monochromatic radiation is applied. On TVs, as we know, colors are obtained by adding three monochromatic colors — green, red and blue. With pure green the picture will automatically become more perfect and more pleasant for the eyes. People will watch their favorite shows with greater pleasure and less eye strain. The picture is more intense when our material is used to illuminate the LCD screens,' specified **Professor Molochev**.

The researcher added that the fundamental side of the issue, i.e. moving on and perfecting other materials that emit an "ideal" luminescence, has been of personal interest to him.

'It is too early to talk about the substance application, since some of its properties need to be improved. I think you will understand that the result has been achieved when a new TV with very good color reproduction and at a reasonable price is released. At present such TVs are very expensive,' concluded the researcher.

The work on the search for new phosphor compounds is still in progress. Prof. Maxim Molochev is a

co-author of an article about the possible rival of “perfect green”, which has been [published](#) in the peer-reviewed international Journal of Materials Chemistry C. However, this “candidate” could not break the record and showed slightly less thermal stability and efficiency.

21 november 2019

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