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## Unexpected luminescence of Cr<sup>5+</sup> and Cr<sup>3+</sup> ions in ZrSiO<sub>4</sub> zircon crystals

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### Abstract

Luminescence, decay-times and EPR spectroscopy of Cr-doped ZrSiO<sub>4</sub> show the presence of both Cr<sup>3+</sup> and Cr<sup>5+</sup> active centers, which can be connected with Zr<sup>4+</sup> and Si<sup>4+</sup> adjacent two-cation replacement. Cr<sup>5+</sup> emission occurs within a similar spectral range as for Cr<sup>4+</sup> and hence confusion is possible.

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