

**Does the  $\text{Pr}^{3+} {}^1\text{S}_0$  level transfer energy to  $\text{Gd}^{3+}$  IN  
 $\text{SrAl}_{12}\text{O}_{19}:\text{Pr}^{3+}$ ?**

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We are revisiting the mechanism for the energy transfer between  $\text{Pr}^{3+}$  and  $\text{Gd}^{3+}$  in  $\text{SrAl}_{12}\text{O}_{19}:\text{Pr}^{3+}$  (SAP). While the energy transfer between these ions is quite efficient in SAP, it has been puzzling why the energy transfer between  $\text{Pr}^{3+}$  and other acceptor ions, like Mn, has not been measured [1,2]. Moreover, we find experimental evidence that the decay rate of the  $\text{Pr}^{3+}$  in SAP  ${}^1\text{S}_0$  level is not affected by co-doping the material with  $\text{Gd}^{3+}$ , although the energy transfer is generally believed to originate from the  ${}^1\text{S}_0$  level of  $\text{Pr}^{3+}$ . Here we investigate role of 5d states of  $\text{Pr}^{3+}$  in the energy transfer process to Gd, with implications for energy transfer to other acceptor ions and the quantum efficiency of SAP in general.

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1. U. Happek, unpublished data.
2. A. Meijerink, private communication