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## The energy transfer between Gadolinium (Gd3+) ion and Cerium (Ce3+) ion

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The series of Ca3(PO4)2 powder with Gd3+ ion were synthesized using combustion method. The powder phosphor has two sets which are as prepared (at 600±250C) and annealed (1000±50C). The concentration of the Gd3+ ion was varied from 0.0 to 7.0 mol %. The characterization techniques used are X-ray diffraction (XRD), photoluminescence (PL), Ultra-violet visible spectroscopy (UV-Vis), X-ray photoelectron spectroscopy (XPS), Scanning electron microscopy and Energy X-ray Dispersive Spectroscopy(SEM-EDS). XRD was used to confirm Ca3(PO4)2 is rhombohedral structure. PL shows when Ca3-x(PO4)2: xGd3+ excited 274 nm and it emit at 313nm (narrow band for phototherapy use). The EDS confirm the present of elements in the samples. The particle morphologies of the series of Ca3(PO4)2 phosphors were investigated by using the SEM. The possible application will be mercury free lamp for phototherapy.

### Apply to be<br> considered for a student <br>> &nbsp; award (Yes / No)?

YES

#### Level for award<br>&nbsp;(Hons, MSc, <br> &nbsp; PhD, N/A)?

MSc

#### Main supervisor (name and email)<br>and his / her institution

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# Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

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