

## Transparent Yb:YAG ceramics

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YAG ceramics doped with rare earth elements have been recently given a consistent attention as materials for various applications. The specific application depends on the doping element added. Addition of Yb is used for the production of active materials for solid state lasers, and YAG polycrystalline ceramics are promising materials for the replacement of single crystals, which are mostly used at present. The advantage of polycrystalline ceramics over single crystals are the lower fabrication costs, faster production or easier preparation of complicated and compositionally graded structures. The poster presents Yb:YAG polycrystalline ceramics prepared *via* solid-state reaction of commercial submicrometer and nanosized powders ( $\text{Al}_2\text{O}_3$ ,  $\text{Y}_2\text{O}_3$  and  $\text{Yb}_2\text{O}_3$ ). Powders were homogenized by ball milling and two different powder drying methods were compared, rotary evaporation and spray drying. Samples were prepared by cold isostatic pressing of homogenized powders followed by calcination in flowing air and sintering in vacuum. High transparency was obtained: optical transmittance greater than 80% was achieved, while the theoretical maximum is 84% at 1064 nm. Furthermore, the effect of the dopant content on properties of sintered material was observed.