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## Silicate bonding extends to the photonics industry

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Silicate Bonding has been used to assemble fused silica suspensions with low mechanical loss in quasi-monolithic optical systems for space missions aimed at tests of GR and in ground-based GW detectors. The technique also has broader applications including the construction of compound optical systems capable of withstanding high laser powers. Study of the optical properties of components assembled using this technique is thus of interest. We report on the bonding of phosphate glass and the measurement of some of the properties of the bond: optical index, thickness, reflectance and Light Induced Damage Threshold (LIDT). The measured reflectance at 532nm is below 0.3% while the LIDT at 1535nm is  $650\text{MW}/\text{cm}^2$  ( $6.5\text{J}/\text{cm}^2$ ). Both these values are in line with the usual requirements for high power lasers which opens the way to promising applications. Future work should focus on extending the measurements and bonding other materials for applications in photonics such as YAG or sapphire.

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