Ga-La-S glass for UV and IR applications

**A. Ravagli\*1,** C. Craig1, D.W.Hewak1.

\*a.ravagli@soton.ac.uk

1Optoelectronics Research Centre, Southampton, United Kingdom

Gallium lanthanum sulphide glass (GLS) have been widely studied in the last forty years for middle-infrared (MIR) applications. In this paper we report the results of the compositional substitution in GLS glass. The samples were prepared via melt-quenching method in an argon-purged atmosphere. A wide range of compositions was studied to define the glass forming region of the modified material. The samples exhibiting glassy characteristics were furtherly characterised. In particular, the optical and thermal properties of the sample were investigated in order to rationalise the role of sulphur in the formation of the glass. The addition of heavy metals to GLS glass generally resulted in a lower glass transition temperature and an extended transmission window. Particularly, the IR edge was found to be extended from about 9µm for GLS glass to about 13µm for doped GLS glass. Furthermore, the addition of these modifications did not affect the UV edge dramatically. Hypothesis on changes within the glass network is also being considered to explain these modifications.