















We have also measured SiPSi structures at the same wavelength. The reason for the relatively high propagation loss (3.9 dB/cm) may be the surface roughness and the fact that low resistivity Si was used in their construction. Therefore, in the future waveguides will be fabricated on more resistive Si, and we will also optimise the oxidation process to reduce the surface roughness and further decrease the loss figures.

Results for SOI waveguides are very encouraging as they confirm that oxide is low loss for wavelengths around 3  $\mu\text{m}$ . Low loss SOI waveguides can now serve as a building block for more complex passive and active MIR devices, and eventually for MIR SOI photonic circuits which will be used in a host of applications offered by this wavelength region.

### **Acknowledgments**

Goran Mashanovich would like to acknowledge support by the Royal Society through the Royal Society Research Fellowship. Part of this work was funded by the United Kingdom Engineering and Physical Research Council (EPSRC) "UK Silicon Photonics" grant. Milan Milošević is grateful to the Higher Education Funding Council for England for the Overseas Research Studentship Award, and to the University of Surrey for the University Research Scholarship. The authors thank William Headley and Pengyuan Yang for their assistance with the measurements and sample preparation.