While much of today’s market upsurge is wireless related, fibre is faring respectably well, albeit not yet in telecoms. There is a surprising amount of activity in the application of fibre to non-telecom applications. While it may never exceed telecom, collectively it is a worthwhile business for some.

Examples of the application of fibre optics are widespread and the portfolio is getting larger. The military is becoming a big user. Not only are fibre optics applications in engine sensors, but also for offensive and defensive systems: FO-guided missiles and torpedoes as well as towed decoys for the B1 bomber (which, incidentally, includes GaAs RF components). Very important is the fibre optic gyro (FOG) and, while it has been overshadowed by the ubiquitous GPS, thanks to possible interruption of satellite signals, the military is looking to FOGs as a back-up.

Other applications are numerous such as submarine periscopes, endoscopes for concealed part inspection, cabin lighting etc. In the auto sector fibre has a lot to offer, because it meets the cost/performance challenge. Simple construction and lower price make fibre suitable for many fields, including vehicle detection and household automated appliances.

Some look forward to so-called ‘enhanced fibres.’ A good example is that of depositing diamond-like carbon layers onto polymer clad silica optical fibres for opto sensors as demonstrated recently by workers at the Warsaw University of Technology. Numerous R&D labs are taking the high quality, low-cost fibres from telecom and creating high performance sensors, amplifiers and other devices. Plus they have production economics to match traditional technologies. The basic fibre is being enhanced via novel doping and coatings, for example, to increase the sensitivity, spectral range and/or robustness to suit sensing requirements which cannot yet be met.

‘Smart materials’ are another key area for fibre and include embedded fibre Bragg gratings. Research topics, which have commercial promise, include diagnostics of the setting of concrete and the identification of failure modes in composites using embedded fibre optics. Already, fibre is being installed in buildings and structures, such as bridges, for applications such as earthquake qualification. But this type of sensing is not limited to static usage and could become widespread wherever composites are used, as in boats and vehicles.

Glasses such as fibre optics are also used as a transmission medium for optical and electromagnetic diagnostics, which allows sensitive instrumentation to be located remotely. Thus fibre optics are being applied to temperature measurement – such as for the growing of III-V crystals! This applies equally well to pollution monitoring, engine management or nuclear reactors. A popular area, which may be low volume but is intrinsically high value, is use of fibre optics for well logging in the oil industry.

All in all, the market for fibre optics is much more promising than the naysayers might have us think. Of course, it is one which is made up of many niches and these are of less interest than the looked for high volume consumer-type businesses. But when added up, these niches represent a usefully sized business for some players.

It is one that, in most cases, also requires a semiconductor device or two at either end of the fibre. It thus should continue to provide a correspondingly important business for the chipmakers and materials people. Who knows, if fibre sensors and related systems take off in cars, then even the majors may sit up and take notice. Of course, the way things are going, these are just the sort of products which will be made in China so as to leverage the optimal economics that seem to be associated with that region today.