Supplementary Information

Various companies produce biomedically approved epoxy/glues however many of these that are listed as biocompatible for use in endoscopes are either UV cured-having a fluorescent photo-initiator, or are coloured with pigments that can also be highly fluorescent. Because Raman is a relatively weak phenomenon, even a small amount of fluorescent molecules excited by the laser can overwhelm the Raman measurement with fluorescent background.

Care must be taken in selecting an appropriate glue that meets the biomedical standard but will also be suitable for Raman measurements. Epotec (USA) and Opti-Tec (UK) offer a few products among their epoxies that fit this criteria.

Table of biocompatible probe manufacturing materials

Material	**Purpose**	**Points of note**
PEEK (polyether ether ketone)	Casings, optics holders, probe body	Autoclavable polymer, 3D printing, high temp resistance
pvc, pei, polyethelyne	Casings, optics holders, probe body, etc	biocompatible 3D printing
PTFE (polytetrafluoroethylene)	Casings, optics holders, etc	biocompatible, 3D printing, low friction, hydrophobic, heat resistant,
gold	fibre coating	biocompatible coating, strengthens fibres eliminates cross talk
Stainless steel 302	3D printing of optics components, needles, probe and optics casings fibre optic coatings	biomedically approved, autoclavable, 3D printing
Dental amalgam (mercury, silver, tin, and copper alloy)		biomedically approved
Silicone (PMDS polydimethylsiloxane)	glue/adhesive, flexible casings	2-part curing, Flexible when hardened, Heat/room temp curing,

		low-autofluorescence, optically clear/colourless, non-toxic, hydrophobic
Epotec Epoxy 301 (Epotec USA)	glue/ adhesive for optics, fibre terminations	2-part epoxy, heat/room temp curing, Optically clear/colourless, biocompatible, low- autofluorescence, quick curing.
Epotec Epoxy 302-M3 (Epotec USA)	glue/adhesive for optics fibre terminations	2-part curing, Wicking, autoclavable, Optically clear/colourless, Heat/room temp curing, Adhesion to metal, ceramic and most plastics. USP VI bio-compatible.
Opti-tec epoxy OPT5007 (Opti-tec UK)	glue/adhesive for optics fibre terminations	2 -part curing, Medium temp. curing, cures optically clear, low-autofluorescence, Biomedically approved, Low viscosity before hardening.
Opti-tec epoxy OPT5006 (Opti-tec UK)	glue/adhesive for optics Fibre terminations	Quick curing, 2-part curing, heat/room temp curing, optically clear/colourless low-autofluorescence, Biomedically approved.
Super glue cyanoacralyte	glue/adhesive	non-toxic, quick drying
Quartz	optics, lenses, cuvettes, transparent windows	optically clear non-fluorescent
Sapphire	optics, lenses, ball lenses	optically clear non-fluorescent
Calcium Fluoride	optics, windows, substrates	optically clear non-fluorescent