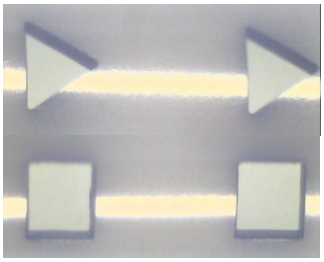
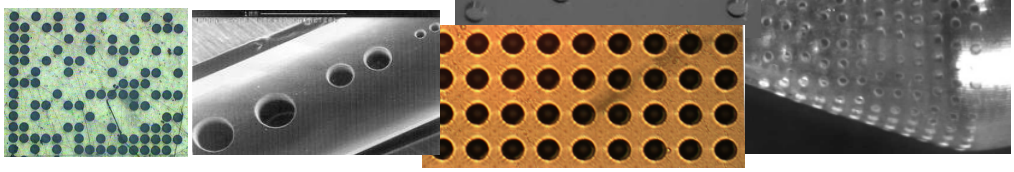
Machining of Polymers Using UV & IR Lasers

Excimer (UV) & Impact (IR) lasers provide precision micromachining of a wide range of technical & biocompatible polymers ;- drilling, grooving & shaping free from deformation or charring, features typically in the range 1μm-1mm:-

Examples include:-

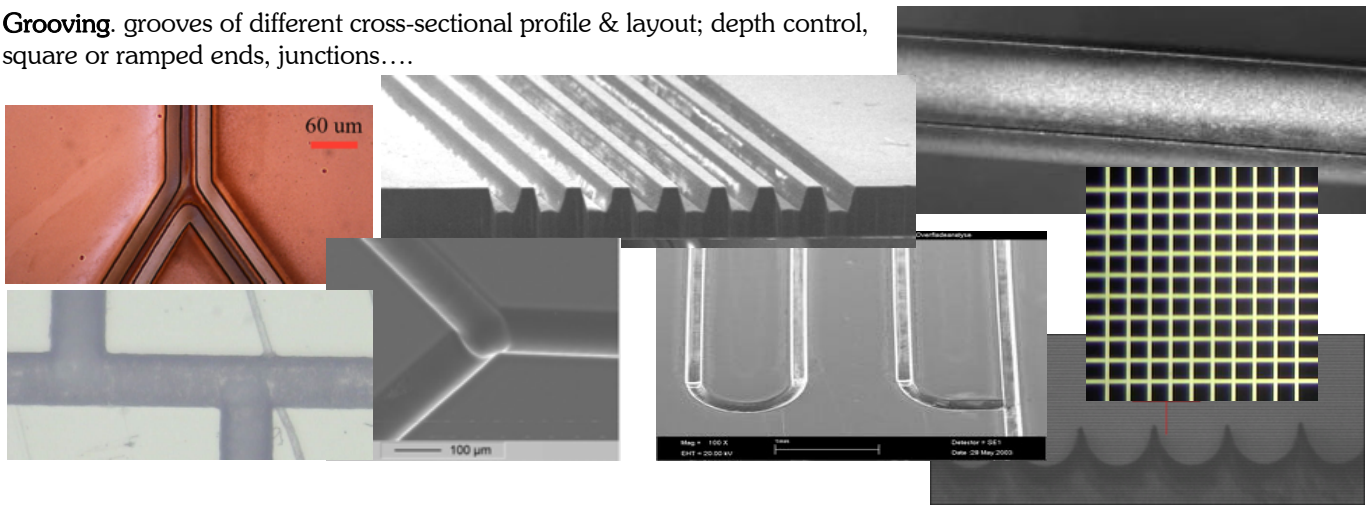
Drilling of precision holes down to 1μm dia., including dense or irregular arrays and in delicate objects like balloons or embolic filters.



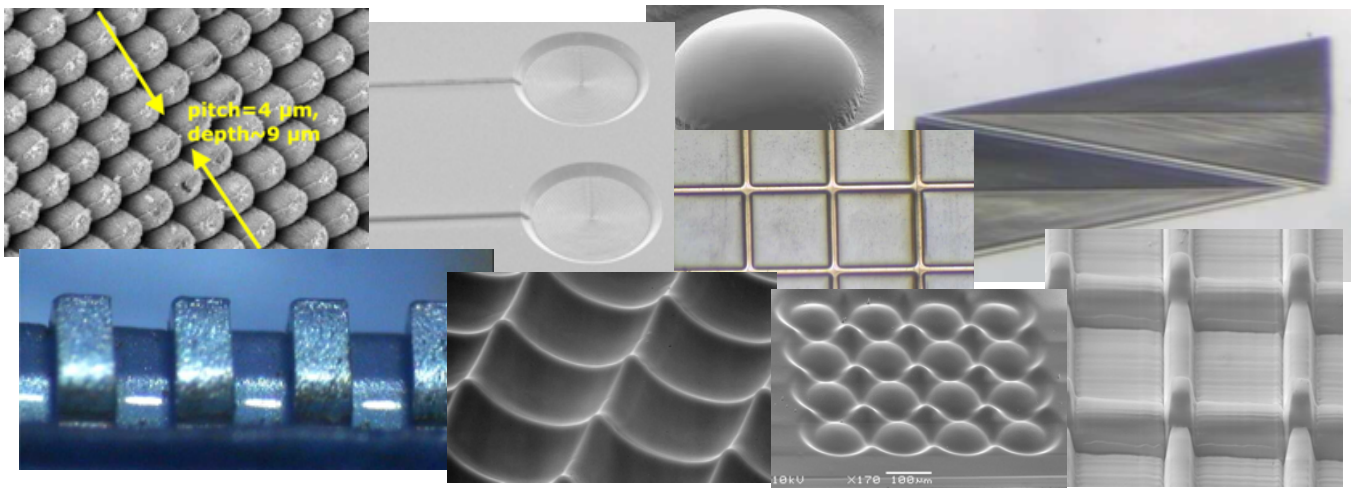


It is just as easy to drill triangular or square holes, and if you want circular, triangular & square holes drilled across the width of a human hair,- we can do it! Impact lasers with lower precision but 20-30X faster removal rate can drill thin polymer films in a single shot 'on the fly'; Optec drilled 40μm holes at a rate of 300 holes/s in salad wrap moving at 3m/s!

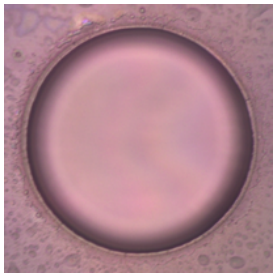
Grooving. grooves of different cross-sectional profile & layout; depth control, square or ramped ends, junctions….

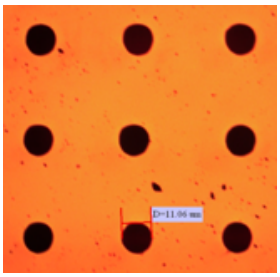


Milling of almost any non-re-entrant 3D shape including optically smooth surfaces(see other Technotes)



Stripping of polymers from other surfaces, usually from metal,- is a common application where excimer technology excels, and is the subject of other dedicated Technotes.





….and not only polymers :-
Excimer lasers are rarely the tool of choice for metals but can also mark, drill & cut hard materials including ceramics, glass (left), diamond (right)& high melting point metals like tungsten & molybdenum.

See other Optec Technotes - - - Use Your Photons!