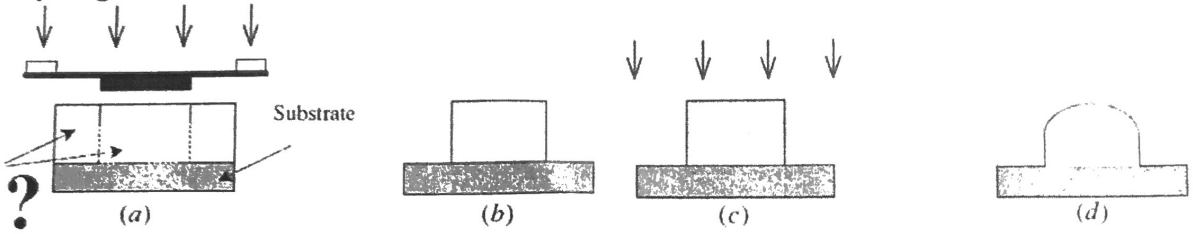
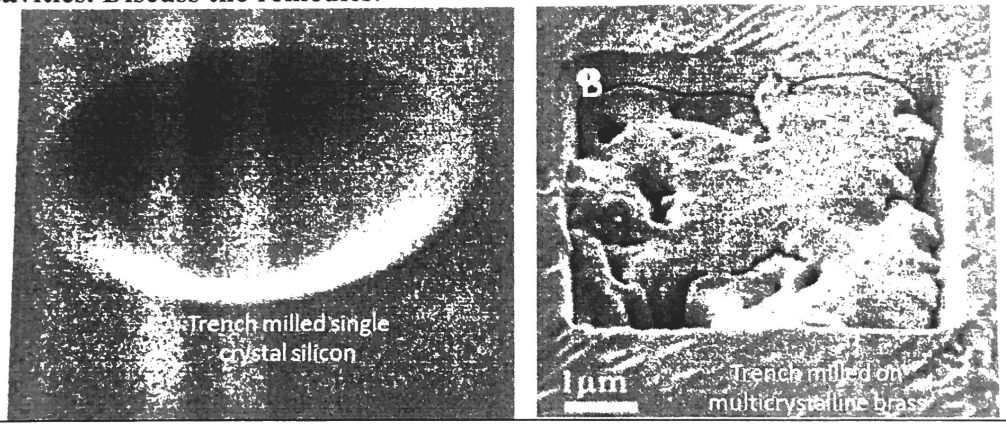
Micro and Nano Manufacturing (MCL331)		B.Tech - MAJOR
Max.Marks :76 Venue : LH310	02-05-2017 Time: 8.00 a.m. -10.00 a.m.	
Neat sketches and drawings are necessary (wherever applicable). Be brief and specific in your answers		
1.a	Write on shape and size of MgZn2 of Aluminum –Magnesium alloy before and after ECAP.	(2)
1.b.	Write on the strain in the material processed with ECAP with various channel angles	(8)
1.c.	Explain the process of fabrication of Tungsten carbide nano particles	(5)
1.d.	Observe the figure. Identify the process, substrate and explain the principle of fabrication at every stage 	(5)
2.a	Explain the Collision cascade mechanism of material removal in FIB machining	(8)
2.b	Compare the cavities made with FIB (Fig A&B). State the reasons for the morphology of the obtained cavities. Discuss the remedies. 	(12)
3.a	With a neat sketch explain the polycrystalline diamond growth with high pressure and high temperature.	10
3.b	Why CVD diamond coating is not preferred on polymers	2
3.c	Comment on the problem experienced with Fe while CVD deposition of diamond.	3
3.d	Discuss the role of hydrogen in CVD diamond process	5
4.	Define critical depth (dc) and explain all the methods to enhance dc for the machining of brittle materials	10
5	One line answer is required: Suggest a suitable manufacturing method to get a. perfect end face of an optical fiber having 150 micron diameter b. Acrylic dome (150 mm outer diameter) having surface roughness value (Ra-100 nm) c. Array of holes having 150 micron diameter with aspect ratio of 1 on sapphire substrate d. Free standing 40 micron thick diamond tube (125 micron inner diameter, length 5 cm) e. Photocatalytic tile f. Textured cutting tools	6