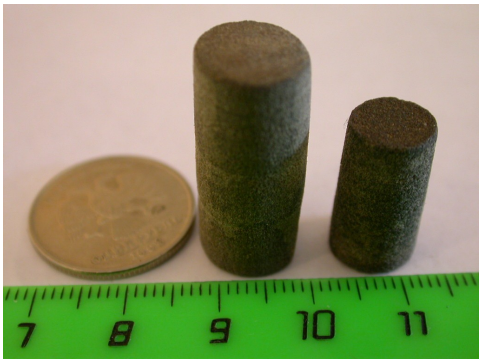
Case name	**Porous Filter Elements**
Dimensions in mm (L x W x H)	Diameter = 10 mm, Height = 15-20 mm.
Application	Gas-Oil industry, Chemical treatment, Porous fuel cells and catalysts.
RM process	Selective Laser Sintering
Software	Own development
System	Own development (Nd^{+3}-YAG laser)
Material	Polycarbonate+Brass = 1:6
Lead time (hours/days)	~ 3 hours
Costs	-



Examples of isotropic (homogeneous) filter elements

Surface finish	Roughness R_a = 5.7-10.9 µk.
Mechanical properties	Brinell hardness, MPa = 35 – 55; Sintered part density, g/cm^3 = 2.3-3.6; Young module E, Mpa = 120- 400. Acoustic wave velocity = 600-1000 m/s.
Thermal properties	coefficient of thermal expansion = (5-7)x10^5 1/grad
Any additional info	- It was shown high selectivity our filters by the gas and oil of centrifugal pumps, which included in the setup of shipped hydro seal electromotor. Main requirement here is low permeability on liquids (oil, crude oil, water) and sufficiently good permeability on gases. - Possibility of governing characteristics of filter (membrane) on the micro and meso level, wide prospects of introduction in the porous filter structure of nano size catalysts, active additives and others.

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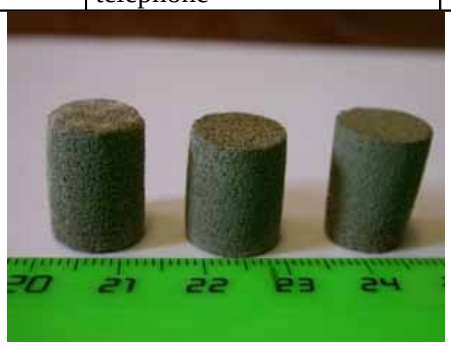
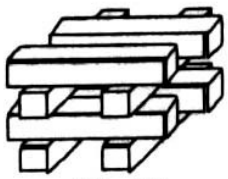


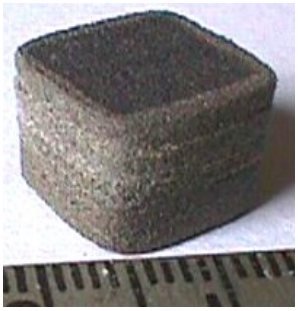
Fuctional graded (heterogeneous) filter elements /physical properties changes from layer to layer/

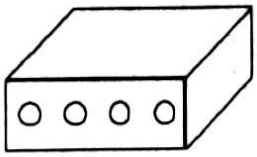
Different types (3-3, 2-2, 3-1) of internal structural connectivity could be realized on the CAD stage and synthesized later.



(3-3)

(2-2)





(3-1)