MODEL CALCULATION OF THE SPECIFIC SURFACE AREA OF ORDERED FRAME BULK POROUS MATERIALS (THIN FILMS) IN NANO SIZE AND ULTRA NANO SIZE FIELDS

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The one/multi component frame bulk porous material (FBPM) with holes uniformly allocated on all surface is considered; presented report data are based on Patent of Invention[1]. FBPM may be useful in different chemical, electrochemical or physical processes. The substantial specific surface area of material may be available for reaction and also the better material properties (corrosion resistance, adsorption properties, mechanical stability and others) may be achieved. The calculated specific surface area S_{spec} of material with equidistant cylindrical holes net (radius r, thickness h and density ρ) is equal (Eq. 1): $(S1)_{spec} = 2/\rho*[1/h + (\pi/(9 - \pi))/r] \sim 2/\rho*(1/h + 0.536/r)$.
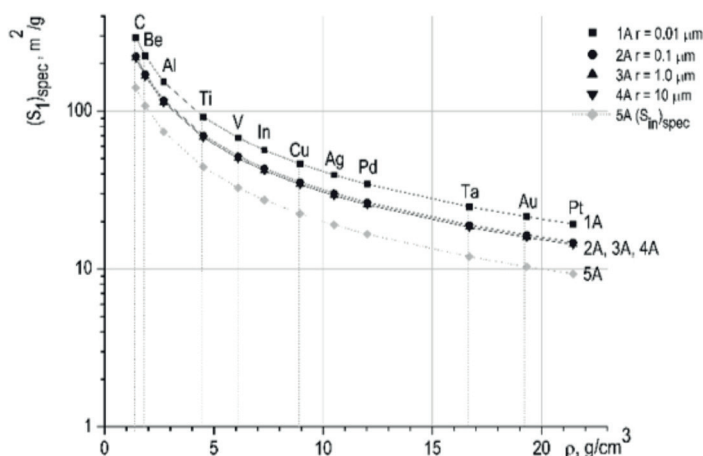

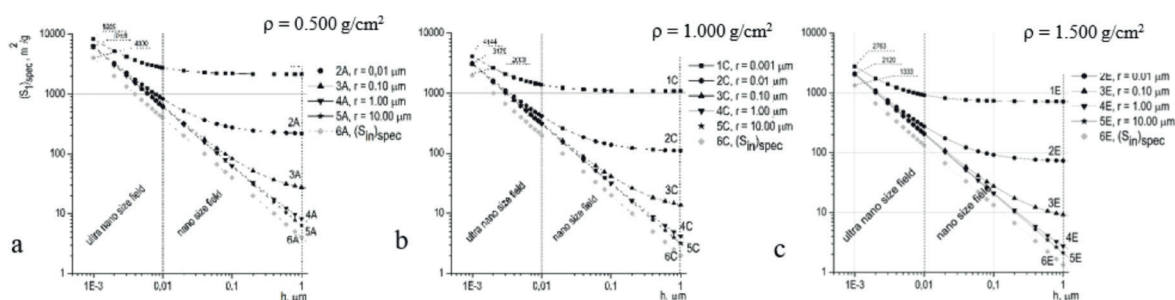Figure 2. Maximal values of $(S1)_{spec}$ of FBPM in dependence on ρ

Figure 2. S_{spec} of FBPM in dependence on h for light materials in ULTRA NANO SIZE and NANO SIZE FIELDS:
a – ρ = 0.500 g /cm³; b - ρ = 1.000 g /cm³; c - ρ = 1.500 g /cm³.

Reference: Sidelnikova O.N., Zacharov M.A., Salanov A.N. Patent RF №2336370 reg. 2008.