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Alumina porous microspheres produced by snowballing technique, a new approach towards developing a suitable ceramic column for Tc-99m generators and other applications.

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Tecnetium-99m generators requires an alumina column to adsorb and hold Molybdenum-99m, this alumina needs to have an increased specific surface area but if the particles are too small they can clog the glass column filter and impair the functioning of it. Considering manufacturing particles of spherical shape, micro-scale size of less than 1mm and loose arrangement still presents a challenge, despite the existence of many processes to obtain such structures involving several steps they lack pores. Microspheres are of great interest because they have a high packing capability, if combined with pores the possibility of possessing an increased surface area leads them to a wide range of applications. The microarchitecture represented by microporosity gives an adsorption potential to microspheres. Snowballing technique is a new process shown to be a suitable method for obtaining ceramic spheres without additives or binders. The method developed is based on a mechanical continuous movement of the particles, relying on the normal ability of the ceramic powders to aggregate themselves while rolling in a cylindrical container for long periods. The physical forces involved in the process, gravity, particle attraction, centripetal force and shocking transforms the ceramic aggregates into rounds with an asteroid like shape on its surface [1]. With this method it was possible obtain microspheres with 40% of porosity and rough surface measuring between 1mm to less than 250µm, according to the sieves used to separate them. This work presents the obtaining of alumina microspheres through Snowballing technique for use on Tc-99m generators. In an effort to broaden the range of application, architecture and microstructures are major aspects of concern hence the obtained microspheres can be also used for other purposes. 1 K.B Violin, T.S. Goia, K. Ishikawa, et al (2014) Advances in Science and Technology (CIMTEC 2014).