ABSTRACT

There is provided a chemical vapor deposition process comprising heating a porous metal template at a temperature range of 500 to 2000 ºC; passing a gas mixture comprising a carrier gas carrying along a vapor of an organometallic compound and at least one of a carbon precursor gas and a boron nitride precursor gas through the heated metal template, wherein the heating temperature causes the decomposition of the organometallic compound vapor into metal particles, the carbon precursor gas into graphene domains, and/or the boron nitride precursor gas into hexagonal-boron nitride domains, further wherein the graphene domains and/or the hexagonal-boron nitride domains nucleate and grow on the metal particles and the metal template to form a three-dimensional interconnected porous network of graphene and/or the hexagonal-boron nitride. There is also provided a foam-like structure produced by a process as described above. There is also provided a foam-like structure as described above for use in electrochemistry, solar cells, filler, thermal interface material, sensing or biological applications.

Fig. 1