

Syntactic foams have buoyancy properties which make them a first choice material for offshore and oceanographic applications. The structures should stand for long times (20-30 years). Durability is therefore a crucial point. However, the material qualification is valid only for 1 year of use (API 16F). Very few data exist on the long term behaviour of syntactic foam. These data are provided by the offshore industry but concern only materials used to a maximum depth of 2000 m. However, problems have been observed in service. Therefore the characterization and understanding of these materials are crucial. Today the offshore and oceanographic industries are interested in going down to greater depths (4000 m). Consequently, it is not only necessary to understand the long term behaviour of syntactic foam in seawater but also to understand their behaviour under higher pressures. The objectives of the PhD will be the development of new characterization methods for long term study in order to understand the long term behavior of such materials.