The main objective of this work has been to assess the feasibility of using a low cost solar installation, consisting in a Fresnel lens, for the sintering of commercially pure titanium (cp-Ti) foams. Fresnel lenses are an effective tool to use in surface engineering because of the advantages such as low-cost, light-weight and high optical efficiency. Titanium foams are suitable in biomedical engineering, for example to process scaffolds for bone tissue engineering, due to their mechanical properties, low density, high chemical resistance and excellent biocompatibility. In this work cp-Ti foams have been processed using a powder metallurgy technique based on the space holder method. NaCl crystals were used as space holders in order to prepare the foams. Different weights of NaCl were added to Ti powder to get a final porosity in the range of 60-80%. Heating rate during sintering process was adjusted with a shutter which controlled the incident solar radiation that gets to the lens. Sintering with different heating times were evaluated but in any case tests were completed in less than 30 minutes. Solar heating activated the sintering process, so that solar sintering of Ti foams in the Fresnel lens required a much shorter time than using a classical heating system.

Solar sintered foam samples were characterized by SEM microscopy, density measurements were obtained using Archimedes’ method and image analysis and Young’s modulus and mechanical strength were determined from a compression test. Results successfully fulfil the requirements for scaffold applications in tissue engineering.

### References