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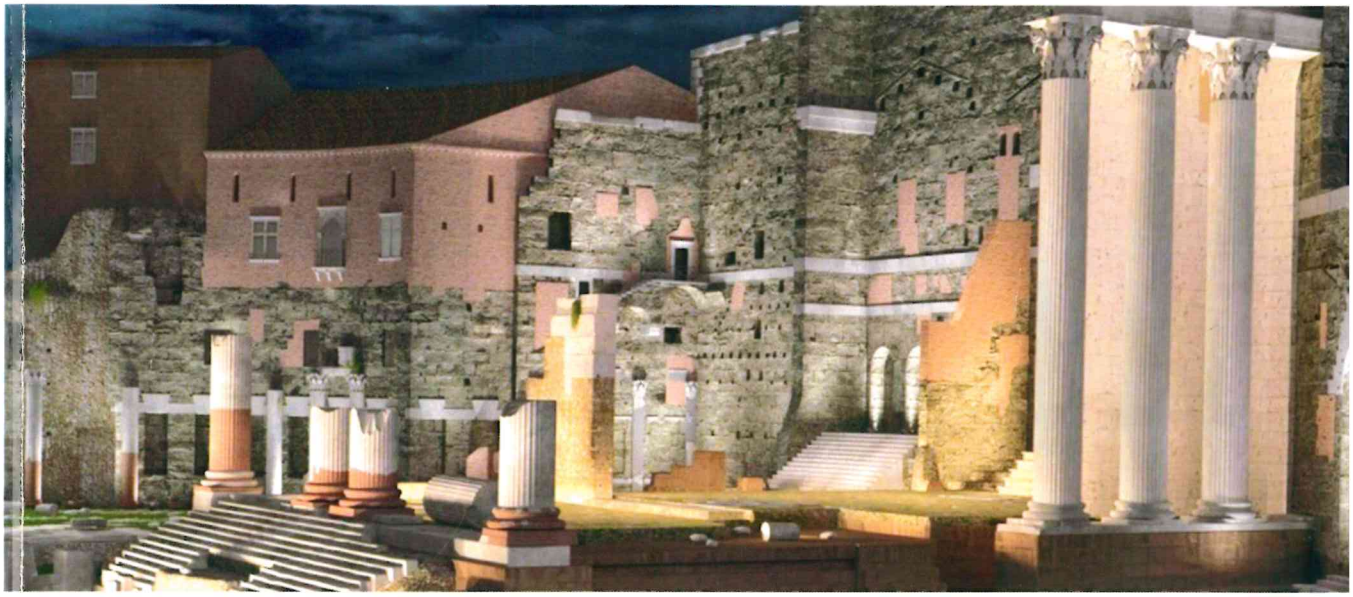

# *Program and Abstracts*

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# Fabrication and characterization of erbium doped bioactive glasses, glass ceramics and optical fibers

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Since the initial discovery of the Bioglass® [1], interest in tissue regeneration has increased [2]. Besides silicate glasses, phosphate glasses with a $P_2O_5$ content equal to 50 mol% have shown to be bioactive, degradable and suitable for fiber drawing [3]. Other interesting properties of phosphate glasses are linked to the engineering of photonic devices. These properties include their easy processing, good thermal stability and excellent optical characteristics [4]. Recently, nanoparticles (NPs) containing glasses approaches to manufacture doped optical fibers have been shown to improve doping efficiency [5]. Apart from the NPs containing glasses, glass ceramics (GCs) have also been found to control the chemical environment of the RE. In fact, these materials combine the mechanical and optical properties of the glass with some advantages of RE-doped single crystals (higher emission and longer lifetimes) [6].

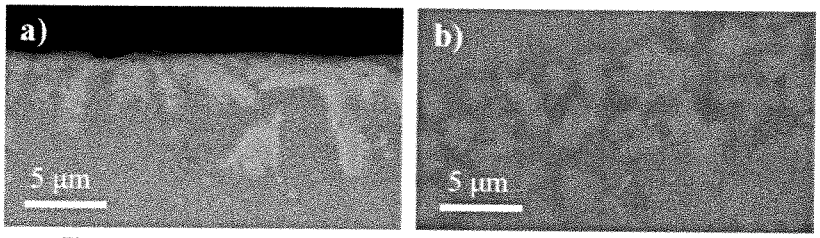


**Figure 1 FE-SEM pictures of glass ceramics (a) and particles containing glasses (b).**

The aim of this project is to develop innovative glasses and glass based fibers with improved spectroscopic properties to be used as sensors. The research activity carried out concerned the synthesis of novel bioactive glasses based on the nucleation and growth of crystals (**Fig 1a**). and on the incorporation of particles into the glasses (**Fig 1b**). Another final goal of the research project will be the processing of new sensors with tailored optical and biological response suitable for use in biological medium.

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