**BANDO N. 400.5 ISMN PNRR**

Selezione per titoli e colloquio ai sensi dell’art. 8 del “Disciplinare concernente le assunzioni di personale con contratto di lavoro a tempo determinato”, per l’assunzione, ai sensi dell’art. 83 del CCNL del Comparto “Istruzione e Ricerca” 2016-2018, sottoscritto in data 19 aprile 2018, di una unità di personale con profilo professionale di Ricercatore III livello, presso l’Istituto per lo Studio dei Materiali Nanostrutturati - Sede di Palermo con assegnazione presso la URT di Messina – CUP B53C22004100001.

**Domande codice 01**

1) La candidata illustri il suo percorso formativo curricolare.

2) La candidata discuta alcune delle sue competenze in relazione alle attività scientifiche relative all’ art.2 lett. B del bando.

3) La candidata mostri alla commissione attraverso un esempio, le sue conoscenze relative all’ argomento di cui all’ art.2 lett. B del bando.

La candidata legga e traduca il brano in inglese allegato in busta

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**Abstract**

Materials based on silicon-phosphorus mixed oxides have traditionally attracted interest in electronics, optics, catalysis, and related fields. The preparation of a solid containing stable Si–O–P linkages is a huge challenge due to their intrinsic instability to hydrolysis in a wet atmosphere. On the other hand, most technological applications of these materials, such as protonic conductive membranes in fuel cells and water-tolerant solid acid catalysts, are related to their interaction with water; consequently, suitable synthesis procedures that positively face this tradeoff are mandatory. Besides the traditional high-temperature techniques, sol-gel synthetic methods represent a viable, low-cost alternative, allowing for the preparation of high-purity materials with a homogeneous distribution of the components at the atomic scale. Si–O–P linkages are easily obtained by nonhydrolytic sol-gel routes, but only in inert and dry atmosphere. Conversely, hydrolytic routes offer opportunities to control the structure of the products in a wide range of processing conditions. The present review aims at providing an overall picture of the research on the sol-gel synthesis of phosphosilicate and related materials and their different applications, emphasizing how the interest in these systems is still lively, considering both conventional and emerging applications, such as flame retardance. The incorporation of Si–O–P nanostructures in polymer composites, coatings, and textiles is indeed a promising strategy to improve properties like thermal stability and fire resistance; however, their in-situ synthesis brings about additional difficulties related to the reactivity of the precursors. The perspectives linked with the development of Si–P-based materials are finally outlined.

**LA PRESIDENTE**  
Prof.ssa Daniela Iannazzo

**IL SEGRETARIO**  
Dr. Giuseppe Napoli

Firmato digitalmente da Daniela Iannazzo  
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