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# S-Nitrosothiol-modified silica/polymer hybrid nanofibers as a nitric oxide storage/delivery scaffold

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Nitric oxide (NO) and its biomedical applications have been extensively studied, because NO is involved in many physiological processes, including vasodilation, angiogenesis, immune response, and wound healing. Several scaffolds have been employed to effectively store and controlably deliver NO such as silica nanoparticle, gold clusters, polymeric particles, dendrimers, and molecular organic frameworks. Recently, electrospun nanofibers as NO carriers have received a great interest in recent years due to their high surface areas, facile functionalization, and tunable mechanical properties. However, physically entrapped NO donor compounds into the polymeric nanofibers may be readily leaked to biological milieu, eventually restricting its biomedical applications. Herein we demonstrate silica/polymer hybrid nanofibers with well-defined structural features where NO donor S-nitrosothiols are covalently anchored, stored, and delivered efficiently. Such NO delivery electrospun nanofibers are synthesized via sol-gel chemistry to form covalent bonding between S-nitrosothiol-modified alkylsilane and silyl-anchored poly(MMA-co-HMA-co-SiMA). Various synthetic parameters (e.g., pH conditions during synthesis, ratio of S-nitrosothiol-modified alkylsilane and poly(MMA-co-HMA-co-SiMA, and type of solvents) will be tuned to modulate the fiber diameter and NO release properties (e.g., total NO release amount and maximum flux). Furthermore, the cytotoxcitiy of S-nitrosothiol-derived NO-releasing nanofibers will be evaulated for their potential biomedical applications.

## Biography

Soo Ji Son received her BS degree in Department of Chemistry at Kwangwoon University in 2015. Currently, she is studying for her MS degree in chemistry at the same University. Her research interest is mainly in the development of nitric oixde storage/delivery nanomaterials.

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