



## Preparation of Sm, Gd and Fe Oxide Nanoparticle-Polydopamine Multicomponent Nanocomposites

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### Abstract:

Nanoparticles of  $\text{Sm}_2\text{O}_3$ ,  $\text{Gd}_2\text{O}_3$  and  $\text{Fe}_3\text{O}_4$ , which have different roles in biomedical applications, were synthesized and embedded in biocompatible polydopamine so as to fully exploit their features in human body. The nanosized particles (4-7 nm) of  $\text{Sm}_2\text{O}_3$  and  $\text{Gd}_2\text{O}_3$  synthesized by the polyol solvent method were protected by polyol to be dispersed in water. Separately,  $\text{Fe}_3\text{O}_4$  nanoparticles (17 nm) fabricated by co-precipitation reaction. Each nanoparticle was successfully embedded into spheres of polydopamine. The co-embedding of three particles in a polydopamine sphere was also proved by the elemental analysis.

### Biography:

Dr. Khoa Anh Ton (Kevin Ton) has completed his PhD at the age of 28 years from National Taiwan University of Science and Technology (NTUST). His publication was prized as "Selected Paper" of Bulletin of the Chemical Society of Japan, 2019. Currently, as a Senior R&D Engineer at Tripod Nano Technology Corporation, Taiwan, he focuses on the fabrication of noble metal (Bi, Se, Pt, Ag...), metal oxide ( $\text{SiO}_2$ ,  $\text{Fe}_3\text{O}_4$ ,  $\text{Fe}_2\text{O}_3$ ...) or composite ( $\text{Au/SiO}_2$ ,  $\text{Pt/SiO}_2$ ...) nanomaterials utilized in a wide range of industrial applications by facile, green and low-cost methods. Patent acquisition is the next journey that he dedicates for scientific society.



### Recent Publications:

- 1 N. A. A. Hashikin, C.-H. Yeong, B. J. J. Abdullah, K.-H. Ng, L.-Y. Chung, R. Dahalan, A. C. Perkins, *PLoS ONE* 2015, 10 (9), e0138106.
- 2 R. Di Corato, F. Gazeau, C. Le Visage, D. Fayol, P. Levitz, F. Lux, D. Letourneur, N. Luciani, O. Tillement, C. Wilhelm, *ACS Nano* 2013, 7 (9), 7500-7512
- 3 N. Nishizawa, A. Kawamura, M. Kohri, Y. Nakamura, S. Fujii, *Polymers* 2016, 8 (3), 62
- 4 J. H. Ryu, P. B. Messersmith, H. Lee, *ACS Appl. Mater. Inter.* 2018, 10 (9), 7523-7540

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