**Effect of Transition Metal Induced Pore Structure on Oxygen Reduction Reaction of Electrospun Fibrous Carbon**[1]

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Finding cost-effective alternative electrocatalysts for oxygen reduction reaction (ORR) is considered as one of the most overriding challenges in the development of electrochemical technologies such as fuel cell and metal-air batteries. Although significant progress has been made in developing carbon-based ORR catalysts as cost-effective alternative to platinum, most of alternative electrocatalysts have been synthesized *via* heat treatment in trial and error. Therefore, it is necessary to investigate factors that can affect to electrocatalysts during synthesis process and how the difference in electrocatalysts can influence the ORR activity. In this study, we investigated effect of transition metal on carbon pore structure formation and ORR activity. Based on the detailed physicochemical analysis with electrospun transition metal containing carbon nanofibers (TM-N-CNFs), we reveal that the ORR activity was totally different in various TM-N-CNFs due to difference in pore structure. Moreover, the reason of different carbon structure formation might be catalytic graphitization that generally occurs during heat treatment of mixture of carbon and transition metal at high temperature.[2,3] Such knowledge is important for the understanding of carbon-based ORR catalysts and the knowledge should attribute the rational design of other carbon-based ORR catalysts to improve performance of them as alternative catalysts.

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