



## **Modified Wacker Oxidation of Ethylene to Acetaldehyde on Cellulose-Aluminum Oxide Composite**

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Wacker oxidation is generally used for transformation of terminal olefins to methyl ketone by co-working of palladium chloride and copper chloride as catalysts. Modified Wacker oxidation have been employed for other applications; for example, colorimetric detection of ethylene by using palladium salt and molybdenum complex as catalyst and co-catalyst, respectively. Palladium acts as a reactive site for ethylene. Whereas, molybdenum is used not only for recycling the main catalyst but also for a color development through molybdenum blue reaction. In this contribution, cellulose-aluminum oxide composite have been developed and applied as a substrate for palladium-molybdenum co-catalyst for Wacker oxidation of ethylene to acetaldehyde. Role of aluminum oxide on the ethylene conversion reaction will be demonstrated and discussed by using nuclear magnetic resonance spectroscopy and x-ray photoemission spectroscopy techniques.

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