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(71) Applicant: **LYONDELL CHEMICAL TECHNOLOGY, L.P.** [US/US]; Two Greenville Crossing, 4001 Kennett Pike, Suite 238, Greenville, DE 19807 (US).

(72) Inventor: **LE-KHAC, Bi**; 1210 Birmingham Road, West Chester, PA 19382 (US).

(74) Agents: **SCHUCHARDT, Jonathan, L.** et al.; Lyondell Chemical Company, 3801 West Chester Pike, Newtown Square, PA 19073 (US).

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(54) Title: TITANIUM ZEOLITE CATALYSTS

(57) Abstract: Catalysts useful for epoxidizing olefins are disclosed. The catalysts comprise a vinylpyridine polymer and a titanium zeolite. Preferably, the vinylpyridine polymer encapsulates the titanium zeolite. The catalysts are easy to prepare and use, they are easy to recover and reuse, and they convert olefins to epoxides in good yields with high selectivity. Surprisingly, ring-opening reactions that form glycol or glycol ether by-products are minimized by using the vinylpyridine polymer-containing catalysts. The catalysts are valuable for making propylene oxide from propylene and hydrogen peroxide. Vinylpyridine polymer-encapsulated transition metals and their use to produce hydrogen peroxide from hydrogen and oxygen is also disclosed.