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Wednesday

Nanocrystalline Coatings Provide Hard Chrome Alternative



Implementation of ESTCP-demonstrated electrodeposited nanocrystalline cobalt-phosphorus (nCoP) coatings on military aircraft will eliminate environmental and worker safety concerns associated with hexavalent chromium used in DoD plating operations, and reduce operational costs.

Replacement of [hard chromium \(Cr\) plating](#) in aircraft manufacturing activities and maintenance depots is a high priority for the DoD. Hard chrome plating is a critical process that is used extensively

within military aircraft maintenance depots for applying wear and/or corrosion resistant coatings to various aircraft components and for general re-build of worn or corroded parts during repair and overhaul. However, hard chrome plating baths contain hexavalent chromium, a known carcinogen. Wastes generated from these plating operations must abide by strict [EPA emissions standards](#) and [OSHA permissible exposure limits \(PELs\)](#). The operational costs to comply with these rules and the increased turnaround times for processing of components require DoD to find an environmentally benign alternative to hard chrome.

Mr. Ruben Prado and Mr. John Benfer of NAVAIR Jacksonville, together with their team, demonstrated that nCoP meets the majority of acceptance criteria for coating quality, adhesion, fatigue, corrosion, hydrogen embrittlement, fluid compatibility, wear, and impact testing for a wide variety of applications. Based on testing to date, the team anticipates that nCoP will be widely specified per [MIL-DTL-32502](#) as a hard chrome alternative.

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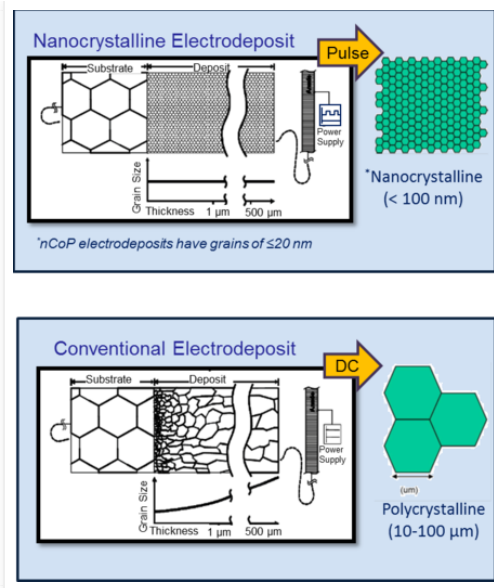
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For this significant work, Mr. Prado, Mr. Benfer, and their project team received the 2014 ESTCP Project-of-the-Year Award for Weapons Systems and Platforms. [Project Overview](#)

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Information provided courtesy of <https://www.serdp-estcp.org>

Posted by Ted Kelly at 7:48 PM

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