

## INNOVATION PROCEDURE FOR POLISHING TIMES CALCULATIONS OF COMPENSATED CMP USING MULTIPLE STEPS OF THE MODIFIED TRIZ METHOD

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**ABSTRACT.** *This article deduces the steps and the required equation for analyzing the polishing frequency of the compensated chemical mechanical planarization (CCMP). These results are gotten by an engineering innovation model which combines the multiple steps of the modified TRIZ method (MSMTM) and the TRIZ contradiction matrix clustering method (TCMC). In general, using TRIZ (Theory of Inventive Problem Solving) contradiction matrix, only a single improving feature is selected for the innovative invention improvement. However, in multiple engineering problems, the improvement object can not be reached if it only follows the above mentioned process. The MSMTM proposed in this study indicates that the main problem should be defined first. Then, the sub-problems which induced from the understanding solving, the main and the preliminary problems can be defined. Then, "TCMC" is adopted to select innovative rules and the engineering knowledge is matched to find the probably solution. Finally, all inventive rules should be combined and matched with the probably solutions, yielding a complete engineering innovation procedure. The TCMC used herein has the advantage of the fast selection of the corresponding worsening feature and the inventive rule, making the engineering innovation procedure more complete than tradition TRIZ method.*

**Keywords:** TRIZ, Compensated chemical mechanical planarization (CCMP), TRIZ contradiction matrix clustering method (TCMC)

1. **Introduction.** The TRIZ theories that were presented by Terninko [1] in 1946 mostly addressed conceptual design, rather than any detailed or concrete design description. Therefore, Terninko suggested that when the TRIZ method is used, other quality design methods, such as the quality function deployment (QFD) method, the Taguchi quality design method and others, should be simultaneously applied. Using such methods, a designer can design better products at the conceptual design stage. In the quality function deployment table presented by León-Rovira and Aguayo [2] in 1998, the correlation among the related technical features could be determined using a contradiction matrix, yielding a more accurate for engineering problems. In 2001, Apte and Mann [3] made many comparisons between Taguchi's design method and TRIZ theory, and determined that their combined use was more effective. In focusing on the information system, Luh [4] adopted database analysis management as a framework, developed a useful and innovative design method, and developed four steps in design analysis. Raju [5], from the perspective of knowledge discovery, took network interaction data as the analysis database, and then applied Sequential Patterns and Clustering Patterns to analyze network user knowledge application and an interactive model. In 2002, Mann [6] considered the