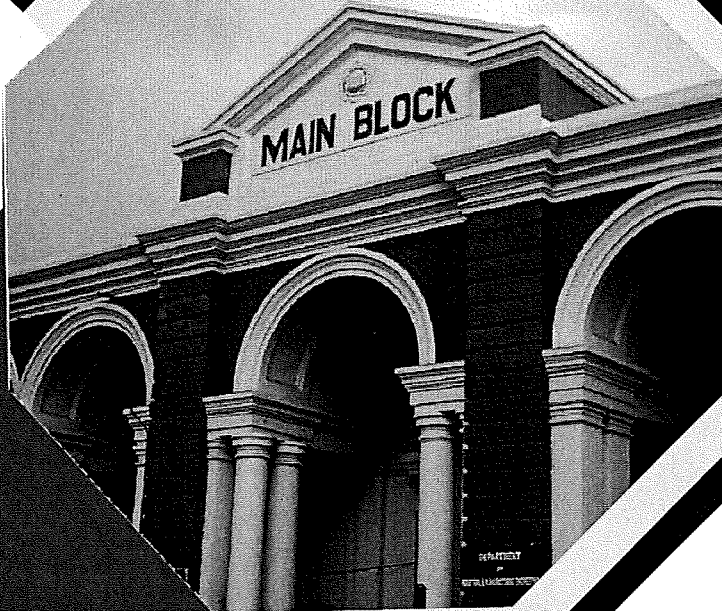


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FOREWORD

International Conference on Mechanical Engineering-2022 (ICME-22) is a multi-module, multi-track double blind peer-reviewed International Conference. held on February 16-19-2022 in Main Auditorium, UET, Lahore, Pakistan.

This conference showcased Research/Policy/Industry Papers, Posters and Projects, Industrial Products Exhibition, Students Professional development from all disciplines of Mechanical Engineering including but not limited to Thermo-fluids, Energy systems, Design Engineering and Stress Analysis, Industrial and Manufacturing Engineering, Engineering Management, Mechatronics, Control and Robotics, Textile Engineering, Aerospace and Metallurgy and Materials Engineering.

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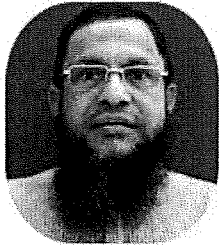
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Recent Advances in Hybrid Coating on Metallic Materials using Liquid Additive Manufacturing



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Abstract

Hybrid coating on metallic surfaces is recognized as a notable surface modification approach because of superior hardness and wear resistance, higher durability, synergistic properties of wear and friction, better lubricity etc. over other conventional or single-phase coatings. The surface coating processes can be divided into three namely, dry, wet, and liquid state and in general, a surface coating process can be applied to the surface of any engineering material for many tribological and high temperature, even ultra-high temperature applications. Here the authors discussed various coating materials, different coating processes, selection of coating systems, performance properties of the coating systems and hybrid coatings with the main purpose of widen the applications of newly developed hybrid coating. However, the biocompatibility, reduction of underlying substrate temperature, coating with oxidation and hot corrosion resistance, and other such recent advancement of hybrid coating with new, green, environmentally friendly, and sustainable coating materials have been seldom understood and published by the researchers although there are scopes for such studies on such sustainable coating materials using new, simple and cost-effective liquid additive manufacturing (LAM) process as a coating process. Further high temperature applications of hybrid coatings have been systematically summarized, including a case study of hybrid coating in terms of microstructure and hardness properties using a cost-effective process of LAM. Finally, the prospects and research directions of new hybrid composite coating are proposed. Therefore, it is hoped that the shift of the highly expensive laser beam liquid process to a cost-effective LAM approach for sustainable hybrid coating would be a major significance of this type of research work.

Key Words: Hybrid Coating; Liquid Additive Manufacturing; Sustainable; High Temperature Tribology