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K. Balamurugan, M. Uthayakumar, S. Sankar, U.S. Hareesh, K.G.K. Warriar

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**Predicting correlations in Abrasive Waterjet Cutting Parameters of Lanthanum phosphate/Yttria composite by Response Surface Methodology**

**Balamurugan K<sup>1</sup>, Uthayakumar M<sup>2,\*</sup>, Sankar S<sup>3</sup>, Hareesh US<sup>3</sup> and Warriar KGK<sup>3</sup>**

<sup>1</sup>Department of Mechanical Engineering, VFSTR (Deemed to be University), Guntur-522213, India.

<sup>2</sup>Faculty of Mechanical Engineering, Kalasalingam University, Krishnankoil-626 126, India

<sup>3</sup>Material Sciences and Technology Division, National Institute for Interdisciplinary Science and Technology, Council of Scientific and Industrial Research, Thiruvananthapuram-695019, India.

**\*Corresponding Author:** M.Uthayakumar, Faculty of Mechanical Engineering, Kalasalingam University, Krishnankoil - 626 126, India. Email: uthaykumar@gmail.com, Fax: +914563289322, Ph: +91 9443918525.

**Abstract**

The machining property of Lanthanum phosphate/Yttria prepared by the aqueous sol-gel process is evaluated using abrasive waterjet machine. Jet pressure, Stand-off distance, and traverse speed are taken as the governing parameters on material removal rate, kerf angle and surface profile roughness. Silicon carbide 80 mesh size is taken as abrasive. A linear cut is done on the composite of geometry Ø30mm and 7mm thickness for the L20 orthogonal array to study the process correlation that exhibits between the independent parameters. The equations are predicted through response surface methodology are evaluated. From the observations, jet pressure has found to have a significant effect on material removal rate and kerf angle whereas, traverse speed significantly affects surface profile to the greater extent. The microscopic examination of the kerf surface reveals the plastic deformation surface, wear track and presence

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