

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY,
BELGAUM**



A Project Report on

***“MICRO MACHINING OF NON CONDUCTING MATERIALS USING ELECTRO
CHEMICAL DISCHARGE MACHINING”***

(Sponsored by K.S.C.S.T)

*Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering in
INDUSTRIAL & PRODUCTION ENGINEERING
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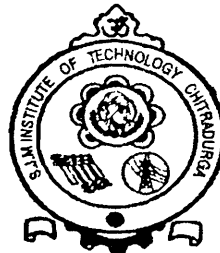
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ABSTRACT

The brittle material like Glass, Ceramics and Non-plastic composites play a major role in automobiles, aeronautics & other industrial applications due to their enhanced mechanical properties. Machining of these materials is difficult & expensive. The increase in the needs for machining of Ceramics for semi conductor, electronic device & LED's has lead to new developments in machining technology. The material removal process is based on the erosion of materials. A need for new techniques for machining these advanced engineering materials cannot be over emphasized.

Electro Discharge Machining (EDM) & Electro Chemical Machining (ECM) play a major role in many industrial applications to machine conducting materials but they fail to machine non-conducting materials.

In this project an attempt has been made to combine the principle of these two i.e., EDM & ECM process to machine non-conducting materials & explore the feasibility of using an Electro Chemical Discharge Machining (ECDM) process for machining of non-conducting materials. Experimental set up for Electro Chemical Discharge Machining (ECDM) was designed. Experiments were conducted according to the Taguchi Orthogonal Array L9 to drill holes in glass at different Gap, Voltage & Concentrations of the electrolyte and analysis was done by ANOVA analysis .It is found that the Gap is the more significant parameter to effect on Material Removal Rate(MRR).