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Modeling of material removal in ultrasonic assisted magnetic abrasive finishing process

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Highlights:

- A new mathematical model for material removal during UAMAF has been developed based on process physics.
- The existence of steady sate removal and transient removal has been successfully established during finishing.
- The instantaneous material removal rate has been considered as a function of instantaneous value of surface roughness.
- The various constants of the MRR model were determined by inverse estimation from the experimental observations.
- The maximum difference in predicted and experimental values of total material removal was found to be ±6%.

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