

## Face Shield Design with Additive Manufacturing Practice Combating COVID-19 Pandemic

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**Abstract :** This article introduces a design, for additive manufacturing technology, face shield as Personal Protective Equipment from the respiratory viruses such as coronavirus 2. The face shields help to reduce ocular exposure and play a vital role in diverting away from the respiratory COVID-19 air droplets around the users' face. The proposed face shield comprises three assembled polymer parts. The frame with a transparency overhead projector sheet visor is suitable for frontline health care workers and ordinary citizens. The frame design allows tightening the shield around the user's head and permits rubber elastic straps to be used if required. That ergonomically designed with a unique face mask support used in case of wearing extra protective mask was created using computer aided design (CAD) software package. The finite element analysis (FEA) structural verification of the proposed design is performed by an advanced simulation technique. Subsequently, the prototype model was fabricated by a 3D printing using Fused Deposition Modeling (FDM) as a globally developed face shield product. This study provides a different face shield designs for global production, which showed to be suitable and effective toward supply chain shortages and frequent needs of personal protective goods during coronavirus disease and similar viruses.

**Keywords :** additive manufacturing, Coronavirus-19, face shield, personal protective equipment, 3D printing

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