



VALUE PROPOSITION

Low cost method to improve surface activation of powders and beads in a controlled environment

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OPPORTUNITY

Research Collaboration, License, joint development program

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Large scale treatment of polymer beads or powders by a Plasma Barrel System

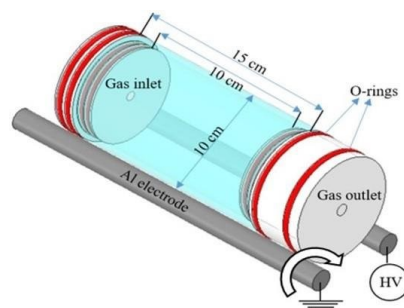
Plasma treated polymer pieces can give improve mechanical performance while plasma treated API can give increased solubility. However large scale treatment by plasma is currently limited by technical and commercial costs of current industrial systems (e.g. fluidized bed systems).

A patented barrel reactor design by the Surface Engineering Group in UCD substantially reduces the cost of plasma treatment while giving a controlled scalable cost effective system.

The solution overcomes the cost of plasma treating in bulk by the development of a plasma barrel with rollers that enable large scale batch treatment combined with low pressure.

This has been validated on a range of polymers; for instance the polymer water contact angles decreased from up to 140° to $< 10^\circ$ after the barrel plasma treatment.

This is a low temperature system; e.g. after 30 minutes of treatment the internal temperature of the barrel is only 29°C .



Technology Description

Scalable technology for polymer injection moulding

Ability to overcome solubility of powders through surface activation.

Rapid deployment and installation possible

Substantial enhancement in the interfacial bond strength with the composite resin.

Key Features

Low cost system as gas use is minimized

Novel design allows rapid plasma treatment across entire barrel contents.

Scalable system that can be integrated into a manufacturing system.