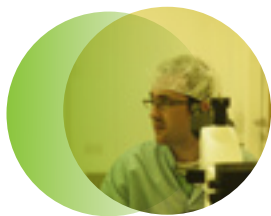


# DEPUY

## INDUSTRY PROBLEM STATEMENT

Orthopaedic devices such as hip and knee implants have and continue to make a dramatic contribution to the quality of life for millions of patients globally. DePuy partners with CRANN to develop materials based solutions for their next generation of medical implant materials. Implant materials are carefully chosen to improve performance, reduce failure/fatigue and so increase the lifetime of the device. Moreover, CRANN provides state-of-the-art surface characterisation technologies that will allow a better understanding of the performance of current materials, allowing DePuy to identify opportunities for the improvement of the life span and the biocompatibility of their next generation products.



## CRANN VALUE ADD

The interaction between an orthopaedic implant at a cell/tissue interface is a surface phenomenon. Surface properties and material selection play major roles in determining both the biological response to the implant and the material response to the physiological condition. Therefore, it is vital that the nature of the implant surface in terms of process material and cleanliness specification at each distinct manufacturing step is (i) well understood, (ii) optimised for best performance and (iii) characterised systematically.

CRANN researchers at UCC and TCD, have strong competencies and extensive experience in using chemical functionalization methods and super critical fluid based processes for developing surface coatings and effective surface treatments. The institute also has expertise in the engineering of biomaterials for device and implant applications, coupled with capability for advanced materials testing and characterisation of coatings down to the nanoscale.

## CRITICAL CRANN ENABLERS

- Expertise in Super critical fluids (SCF) and chemical functionalisation.
- Surface preparation, patterning and film deposition techniques.
- Advanced surface characterisation techniques.
- CRANN Researchers available to work directly with DePuy's manufacturing engineers.

## TYPE OF ENGAGEMENT

CRANN engages with DePuy via schemes such as IRCSET, TIDA, the Innovation Partnership, direct contract work and FP7. The Technology Innovation Development Award [TIDA], is co-supported by Science Foundation Ireland and funds activity that targets commercially oriented research focused on new technology development.

*“CRANN has a strong affiliation with DePuy, working on cutting edge technology in the areas of high performance materials and state-of-the-art characterisation technologies that add a lot of value to the development of new products for DePuy”*

*Dr. Sonia Ramirez-Garcia, DePuy (Ireland)*





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*Scaling Industry Interactions  
Utilising a Portfolio of Engagement  
Mechanisms*

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