**Check One:** [x] **Project** [ ] **Review** [ ] **Collaboration**

[ ] **Workshop** [ ] **Other**

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| **Descriptive Title** | Secondary Nucleation Mechanism Assessment in Crystallisation Processes |
| **Working Title[[1]](#footnote-1)** | Assessing Secondary Nucleation |
| **Technical Area[[2]](#footnote-2)** | Particle Formation |
| **Date** | 16th June 2025 |
| **Short Description** | There are several models for secondary nucleation (SN) processes, but assessment of the parameters is frequently confounded by the simultaneous presence of other processes, including crystal growth, attrition and agglomeration. Additionally, the SN rate process can depend on supersaturation or, in the case of attrition, on particle size. Currently, for each new system (including solvent changes) it is time consuming and non-trivial to determine the appropriate model, and generate suitable parameters for implementation in a population balance model (such as in gPROMS). |
| **Objectives** | * Design a protocol to determine the presence or absence of secondary nucleation mechanism (or mechanisms) occurring in a crystallization process.
* Ensure the competing mechanisms such as growth, *etc.* are deconvoluted.
* Find a means to rapidly assess the optimal model(s) and approximate values for parameterising the model for PBM.
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| **Scope** | In-process analysis (PAT) would be preferable but bespoke offline experimentation is also in scope. |

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| **Recommended Contractors (2 or 3)** |
| **Name\*** | **Institution** | **Email Address** |
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| **Submitted By:** |
| **Name** | **Organization** |
| John Hone | Syngenta |
| Pieter Vonk | Envalior |
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\*Jim, if this gets through Pieter and I will discuss which two to request proposals from.

1. Title used in meeting agendas and file archives [↑](#footnote-ref-1)
2. One or more from the following list: W = wet systems; D = dry systems; F = particle formation; SR = size reduction; M = modeling; SE = systems engineering [↑](#footnote-ref-2)