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**“Player Responses”**



Historical Performance Table of Players

Player ID	001	85.89 ± 4.27	78.26 ± 5.37	87.71 ± 4.11	74.59 ± 5.49	85.14 ± 4.40	85.58 ± 4.60	87.81 ± 2.13	83.55 ± 2.20	51.53 ± 6.64
	002	83.92 ± 4.07	76.24 ± 4.96	85.61 ± 3.92	76.18 ± 4.99	82.02 ± 4.10	82.63 ± 4.39	88.84 ± 1.70	77.39 ± 2.28	51.31 ± 6.25
	003	82.07 ± 4.65	71.20 ± 6.04	84.72 ± 4.37	71.49 ± 5.83	77.74 ± 5.03	77.95 ± 5.22	81.19 ± 2.58	73.68 ± 2.58	48.52 ± 6.75
	004	72.86 ± 6.77	71.46 ± 6.96	76.67 ± 6.12	72.78 ± 6.36	77.18 ± 5.71	77.68 ± 6.17	82.50 ± 2.68	82.59 ± 2.08	50.63 ± 6.89
	005	77.63 ± 5.35	72.02 ± 6.14	81.53 ± 4.97	72.96 ± 5.79	79.64 ± 4.87	79.81 ± 5.23	72.23 ± 3.16	78.05 ± 2.41	47.83 ± 6.57
	006	77.43 ± 3.46	70.51 ± 4.05	79.24 ± 3.13	72.39 ± 3.70	77.41 ± 3.49	79.49 ± 3.12	62.34 ± 2.93	72.56 ± 1.97	47.76 ± 5.36
	007	72.14 ± 5.96	63.86 ± 6.95	75.33 ± 5.55	67.13 ± 6.30	71.23 ± 5.71	73.87 ± 5.72	87.43 ± 1.93	72.77 ± 2.49	48.64 ± 6.54
	008	80.32 ± 5.01	72.36 ± 6.03	82.97 ± 4.71	73.42 ± 5.66	81.49 ± 4.70	81.18 ± 4.93	86.99 ± 2.08	76.27 ± 2.48	51.64 ± 6.57
	009	67.26 ± 7.61	61.61 ± 8.09	74.96 ± 6.58	65.73 ± 7.31	70.72 ± 6.68	71.60 ± 6.99	49.77 ± 4.79	75.17 ± 2.58	42.11 ± 7.31
	Task ID	001	002	003	004	005	006	007	008	009

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Player Responses

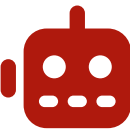
Nucleation rates increase at greater undercooling due to higher driving forces, while growth is favored at lower undercooling because atoms have sufficient mobility for crystal growth.

Nucleation requires high energy barriers, favored by greater undercooling. Growth occurs more easily at lower undercooling.

Nucleation rates are higher at greater undercooling because the energy barrier for nucleation is lower, allowing more nuclei to form. Growth occurs at less undercooling because the existing nuclei have enough energy to grow into larger crystals.



Fusion Agent



Historical Performance Table of Players

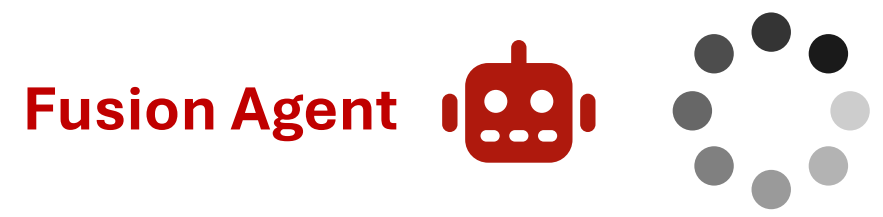
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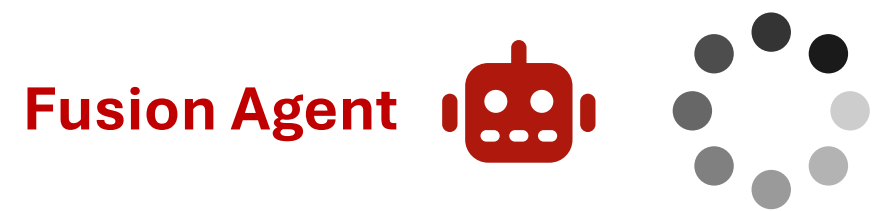
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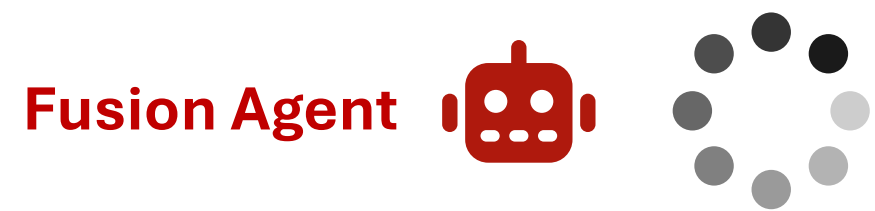
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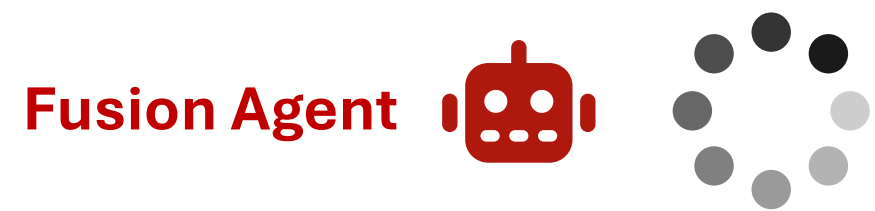




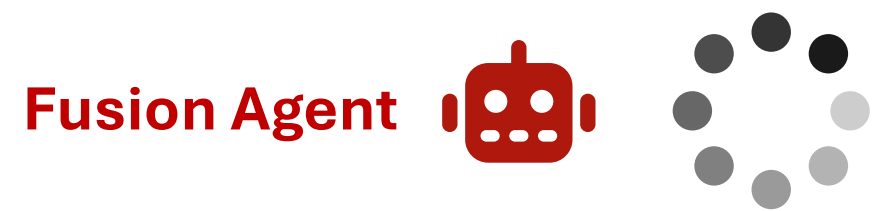
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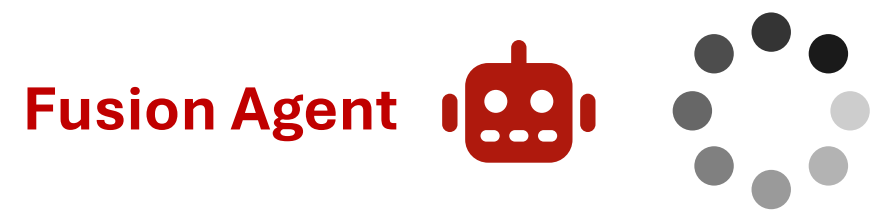
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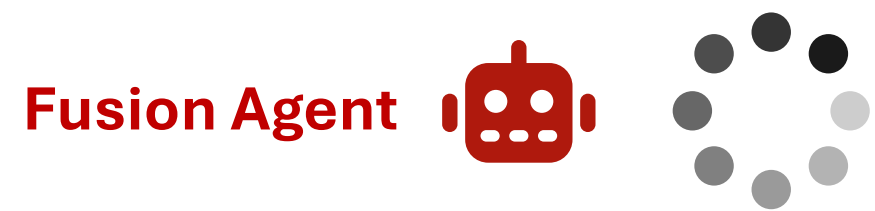
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Generation Complete!



## **Fusion Agent**

Nucleation rates increase at greater undercooling because the energy barrier for forming a stable nucleus decreases, providing a higher driving force for phase transformation. Growth rates are higher at less undercooling because there is more thermal energy available, allowing atoms to move and form a stable new phase more easily.

### **Agent 1**

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**Human Curated Ground Truth (e.g.):** Nucleation rate is highest at greater undercooling (larger driving force), but growth is diffusion-limited and slows if temperature is too low. At smaller undercooling, growth is faster, yet nucleation is lower, leading to competition between the two rates.

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### AI Committee

Grader 1

Grader 2

Grader 3

Grader 4

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**Grades: 89.50±4.50**



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