My Impression and Opinion on this Lecture

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Professor Kohei Kusada's lecture on inorganic nanomaterials was a mind-stirring journey across disciplines. As a computer science to fusion plasma modeling student, I see the world via information and control. His nanoscale "material manipulation" resonated deeply with my familiar "world of code."

The "precise control" over nanoparticle atomic arrangements and crystal structures, yielding dramatic property changes, was impressive. It’s more than materials science; it’s atomic-level "code refactoring." Altering the "instruction set" (atoms, layout) "compiles" materials with new "functional modules" (properties)—a far more efficient design philosophy than trial-and-error.

High-entropy alloys/oxides overturned my notions of material "purity" and "order." Introducing "controlled chaos" (high entropy) can yield superior performance, much like algorithmic randomness can escape local optima for global solutions. This makes me question if, in complex plasmas, we over-focus on idealized models, missing constructive roles of "impurities" or "non-ideal factors."

Strikingly, alloys of "incompatible" elements, ingeniously combined at the nanoscale, surpassed single noble metals. This recalled open-source power: diverse developers contributing "code snippets" to create superior software. Such "cross-disciplinary integration" is vital for research, especially in collaborative endeavors like fusion.

From nanomaterials' "atomic games" to fusion energy's blueprint, a common thread emerges: deeper understanding of complex systems and sophisticated control. Professor Kusada's lecture broadened my materials science view and fueled my resolve to integrate computational thinking with physical modeling for energy solutions. Perhaps fusion's key lies in such interdisciplinary "code refactoring" and "intelligent integration."