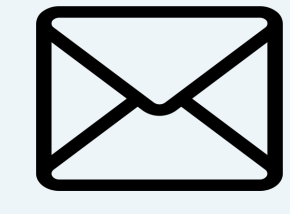




PRESENTER

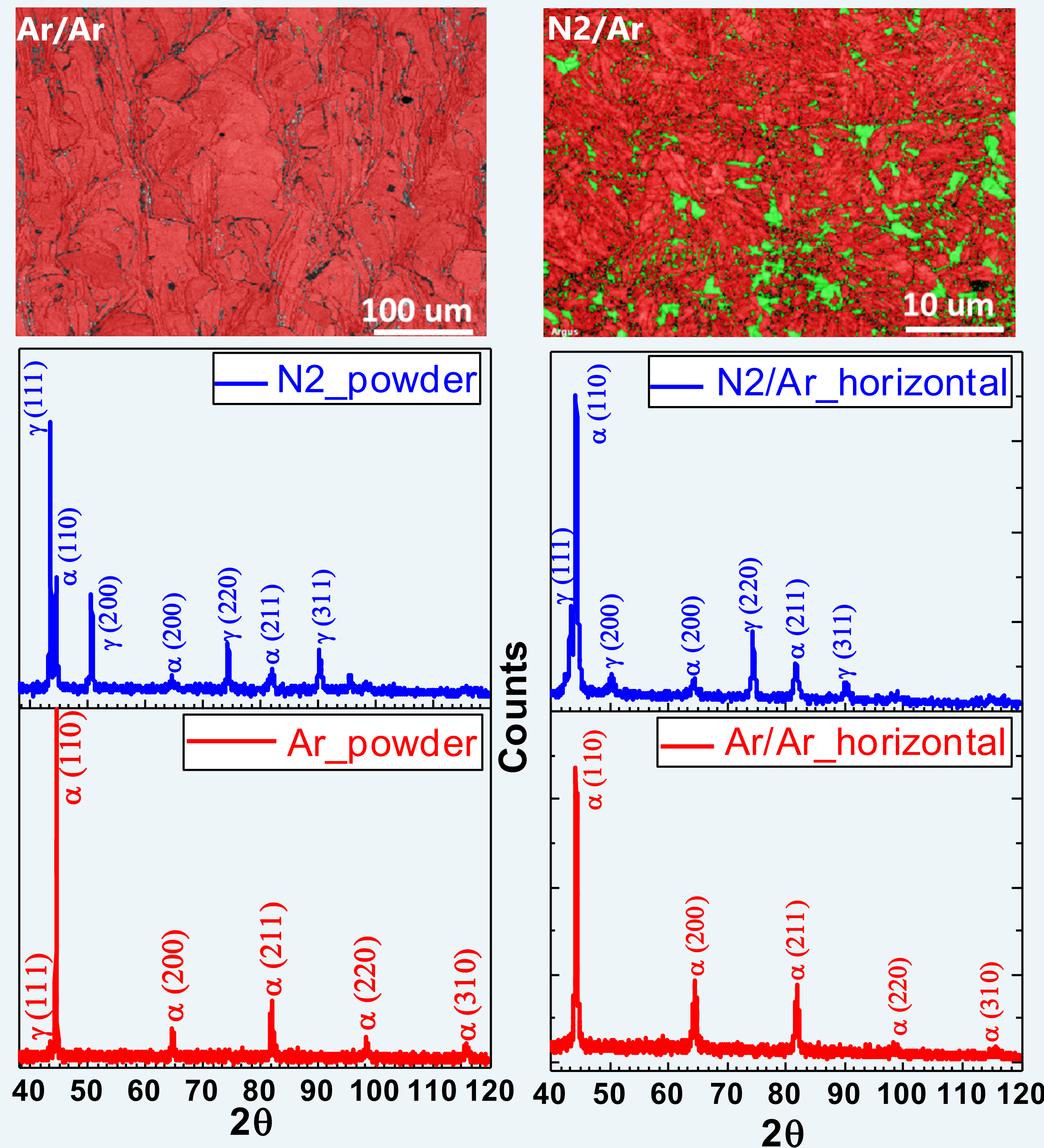
Kaushalendra K Singh



Background

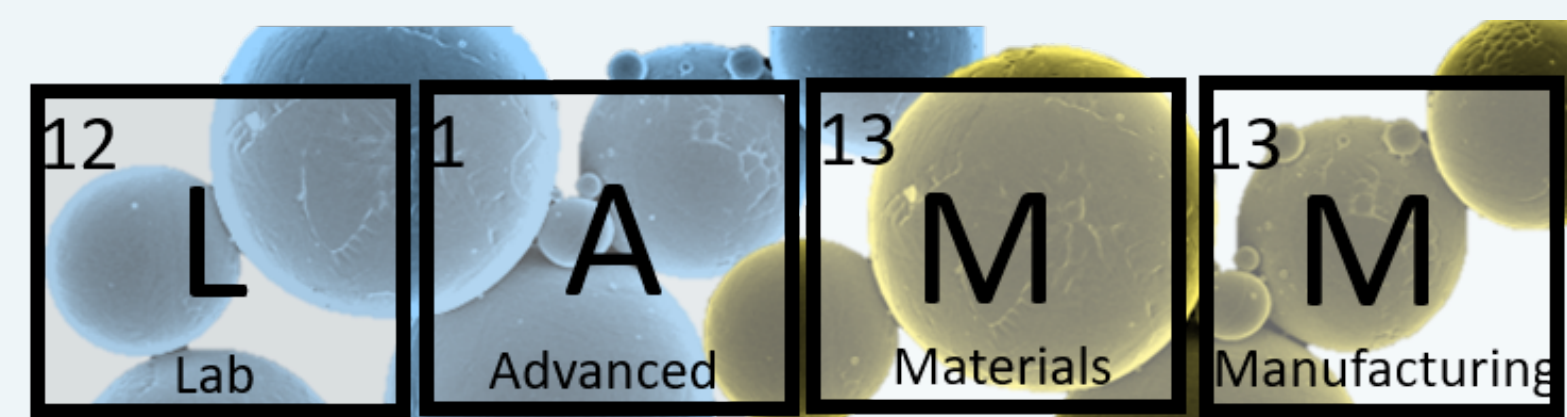
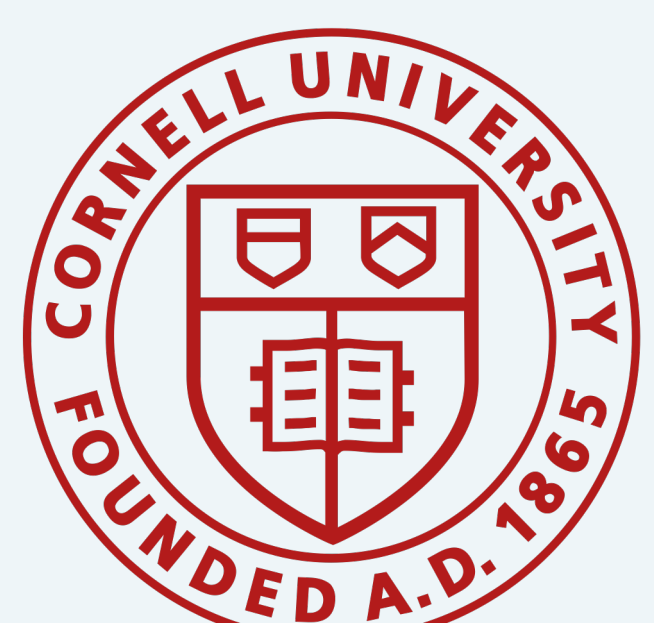
The type of gas used during **atomization** of the feedstock powder can affect the **microstructure**, **phase composition** and consequently, the mechanical properties of the part printed using selective laser melting (SLM). The impact of two different atomizing gases, **nitrogen** and **argon** on SLM printed precipitation hardened 17-4 stainless steel (PH17-4 SS) has been investigated.

Results



Acknowledgements

We thank Moog Inc. for providing the feedstock powders and the printed samples. We also acknowledge the use of Cornell Center for Materials Research Shared Facilities which are supported through the NSF MRSEC program (DMR-1719875).

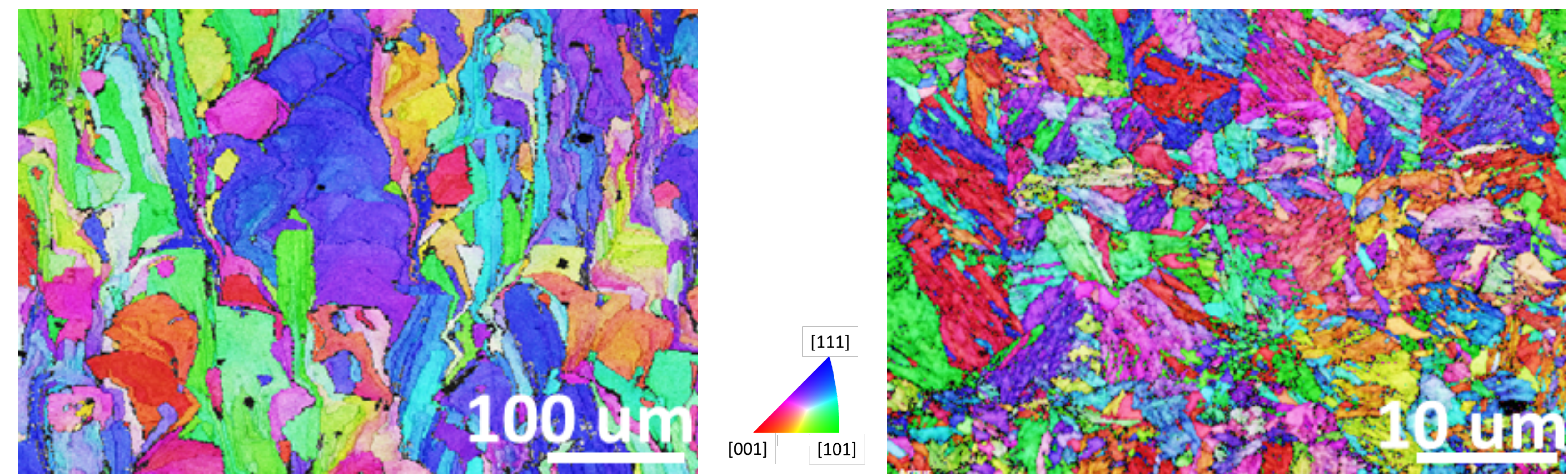


Atomization gas can impact the microstructure and phase composition during selective laser melting.

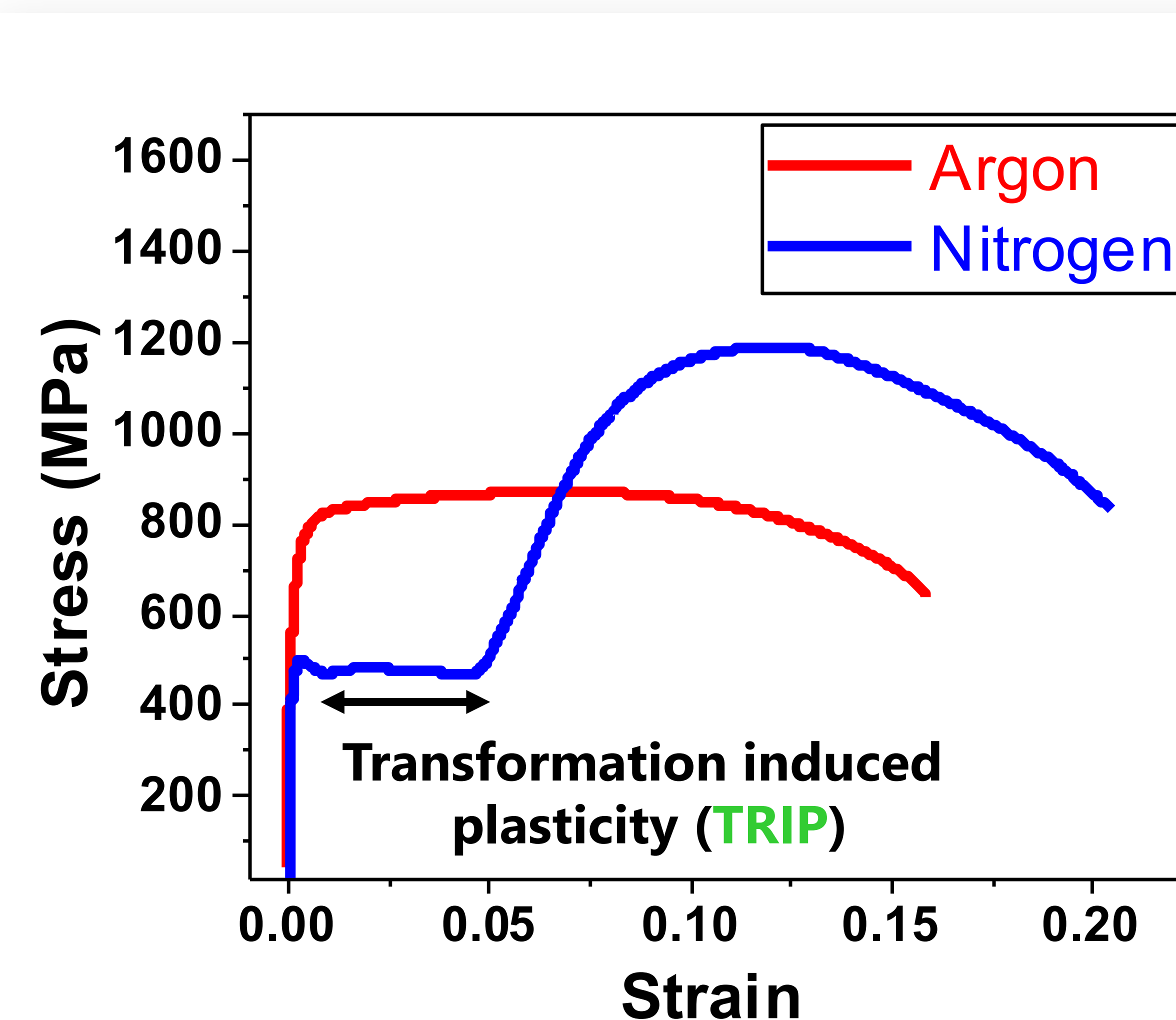
Kaushalendra K Singh, George ABOTT And Atieh Moridi

Sibley School of Mechanical and Aerospace Engineering, Cornell University

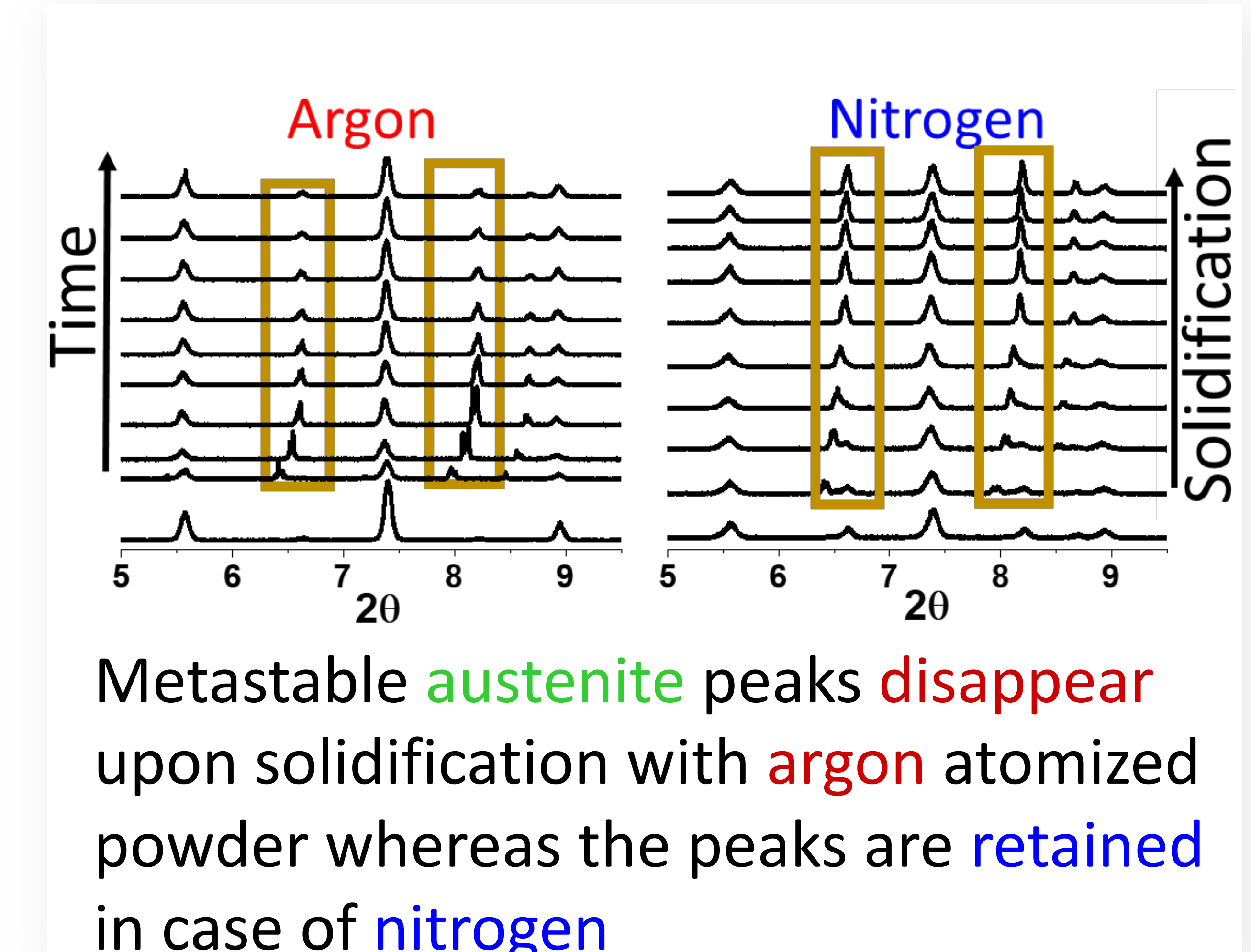
Use of **nitrogen** atomized powders leads to **grain refinement** (20x smaller)



Both tensile strength and ductility are **higher** in case of **nitrogen** atomization



Nitrogen atomization enables **austenite** retention at room temperature



Zoom link: <https://tinyurl.com/3bsd4jmc>