Typical arc melters only provide small ingots or “buttons” (typically less than 100 grams) that, while useful in the study of thermodynamic phase diagrams, or nanoscale property assessment, do not provide samples large enough to produce macroscopic test samples for industrially relevant uniaxial strength and fatigue samples, like those required in the work of Eason and collaborators from other institutions. In addition to the continuous casting capability, the same bottom port in the Arcast 200 has been configured in the quoted instrument to be used for suction casting. Suction casting or vacuum casting is an unusual feature for a research scale arc melter, again making this instrument highly unique. This capability supports the research if Eason, Stagon, Netto and external collaborators in their investigations into the role of pore formation in various alloy system. By drawing molten metal upward into a mold using suction or vacuum, the effects of downspout and riser turbulence are eliminated. This process is widely used in industry, but rarely available in academic research laboratories making the ability to support industrial research in the advanced manufacturing program at UNF more likely to receive industry-based funding and high TRL funding from federal agencies.

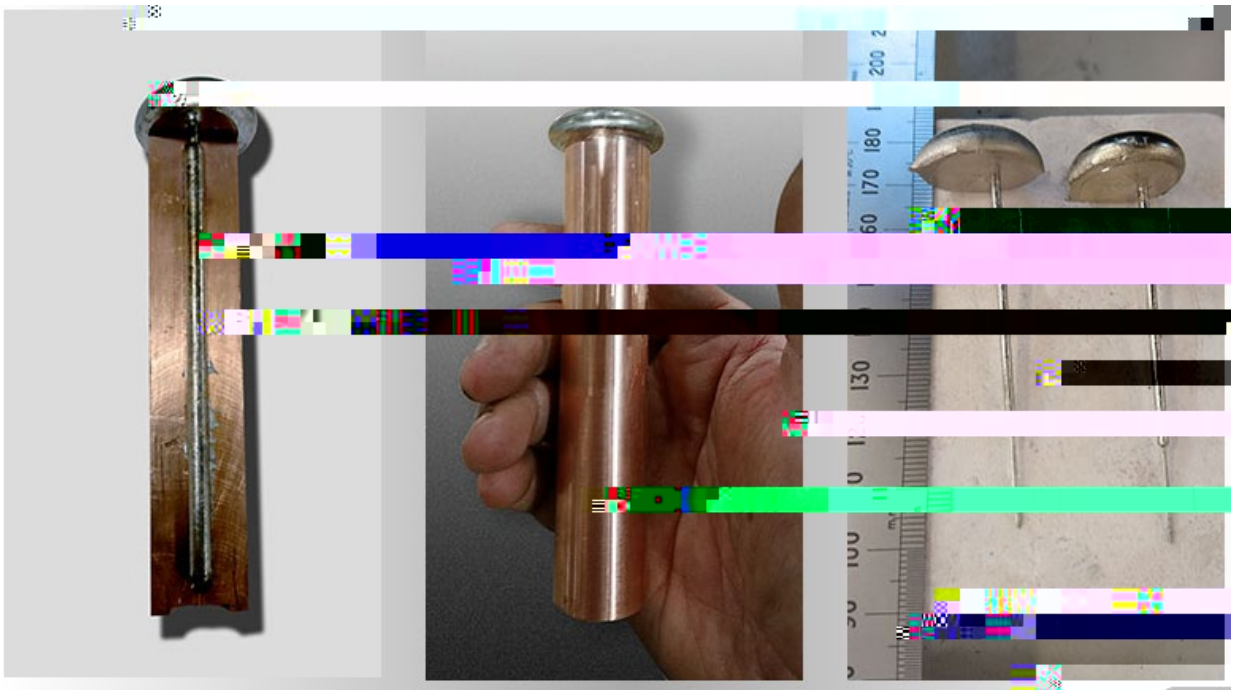
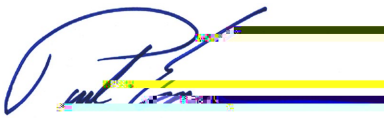


Figure 2. Examples of scution (vaccuum) cast samples obtained in an Arcast 200 arc melter.

Finally, and possible most importantly, the ability to produce powders by means of research scale arc melting is a relatively new capability in the field. These instruments are typically “stand alone” units configured for the sole purpose of powder production. Combining this feature and its different

to collaborate with materials science faculty in the developmental research in their current disciplines. With the only manufacturing degree in the state of Florida, UNF should be compelled to purchase this instrument for the ways it will augment teaching alone. The research benefits for all the faculty described represent a new strategic direction for applied research in materials science and advanced manufacturing.

Sincerely,



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