

In Memory of Tihiro Ohkawa:

I had the privilege to work under Tihiro Ohkawa's leadership at both General Atomics (GA) and Archimedes Technology Group (ATG). Tihiro was an exceptional, brilliant individual with many talents and varied interests. Since I expect most tributes here to identify and recognize the many and unique contributions Tihiro made to plasma physics and particularly fusion research, I will focus on his later work at Archimedes, other aspects of his life and the characteristics that made him a valued friend and colleague.

Even while at GA, Tihiro's scientific interests were in no way limited to fusion research. I will mention just two of many examples. He thrived on innovation and sponsored an annual "AWAKHO" contest at GA for the best innovative idea, and the winner could pick a technical meeting anywhere in the world. Also, one summer he taught himself biology to facilitate conversations with his children, and he ultimately started some biology based research at GA. This research was part of wide ranging set of topics Tihiro and his staff investigated at GA's Institute for the Development of Advanced Technology which Tihiro founded and led.

After leaving GA, Tihiro, then in his 70's, originated the ideas behind Archimedes Technology Group. ATG was a privately funded company dedicated to developing a new more affordable approach to cleaning up the radioactive waste at Hanford. This was a very innovative period for Tihiro. He proposed a new technology using plasma to achieve separation of the radioactive components of nuclear waste. He then wrote innovative technical memos weekly, and sometimes daily, covering every aspect of the project. A search of his patents issued

during this period demonstrates his creativity. Subsequent research at ATG further developed and refined this approach, and experimentally demonstrated its effectiveness using a non-radioactive surrogate waste. Despite the technical success, government funding to work on radioactive waste was never realized, and Archimedes closed. For those interested in learning more about Archimedes, a reference is attached [1], but it only details progress over the first few years and does not include the separation results. Since the research was privately funded, final results were not published, but were favorably reviewed by the US scientific community.

Physics was Tihiro's passion and he lived and breathed it, but he found time to enjoy golf, tennis, and skiing as well as follow the local sports teams. Tihiro brought a “unique” style to every interest he pursued and golf was no exception. His swing would pause at the top before continuing. Many times I witnessed him bouncing the ball off the water fronting the 18th hole at Torrey Pines and landing close to the pin! He was also a dedicated fan of the local professional sports teams and always had a theory about how they could improve their woeful records. Although he followed the local professional football team, his preference was playing soccer. He often played for GA in their APS soccer matches against Princeton.

He carefully planned family time into his schedule, and particularly enjoyed their annual ski trip and Las Vegas jaunts. Tihiro used to say the ski trip was his annual medical checkup – if he could survive all day skiing he was in good health.

Tihiro will be remembered for his many technical contributions. In fusion these include elongated plasmas for fusion research, the OHTE

concept, “Ohkawa” current, steady-state reactor concepts using various current drive approaches, and many more ideas too numerous to recount here. I will remember him as a valued friend, business colleague, and technical mentor.

[1] “Archimedes Plasma Mass Filter”, Freeman, et al, published in “Radio frequency power in plasmas : 15th Topical Conference on Radio Frequency Power in Plasmas : Moran, Wyoming, 19-21 May 2003”

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