Figure 1. A custom aluminum injection mold that creates a ball-and-stick model of polyethylene

Aside from making the mold, the actual process of injection molding is fast and easy to learn. The author's initial effort to introduce education in plastics manufacturing was done while teaching high school juniors and seniors. The students had no difficulty learning to use the IMM, and because it produces parts very quickly it could be incorporated into lessons without diverting much class time away from the learning objectives aligned with the mandated curriculum. For example, the author used a custom mold for a toy wheel to allow high school students to make their own balloon powered cars for studying momentum in a physics class[23]. For undergraduate engineering majors, a hobby scale IMM could be incorporated ind1 245 e3195RGergraded -6

their own molds and successfully manufacture plastic parts. Students showcased skills in CAD/CAM, machining, work design, and quality control.

Learning objectives included the ability to plan the mold design based on requirements, to select proper tooling to machine the mold cavity, to make aligned mold cavities in a two-part mold, to use CAM software to create files for CNC machining, to use CNC machining tools to create aluminum molds, to develop work procedures for using the mold with the IMM, to develop quality control procedures, and to collect and analyze data to verify project requirements were met. Deliverables included CAD/CAM files, the injection mold, examples of plastic parts made with the mold, work procedures, quality control procedures, verification data and test results, as well as a report and presentation. Grading was based on progress assessed during weekly meetings, general quality of work, and thoroughness of verification testing to demonstrate that requirements were met. The senior design teams that worked on mold making projects indicated that it was a challenging but

The author used the IMM for classroom activities with 12 groups of students over two consecutive ached [/Bottom]/Type/Pagination/u5a