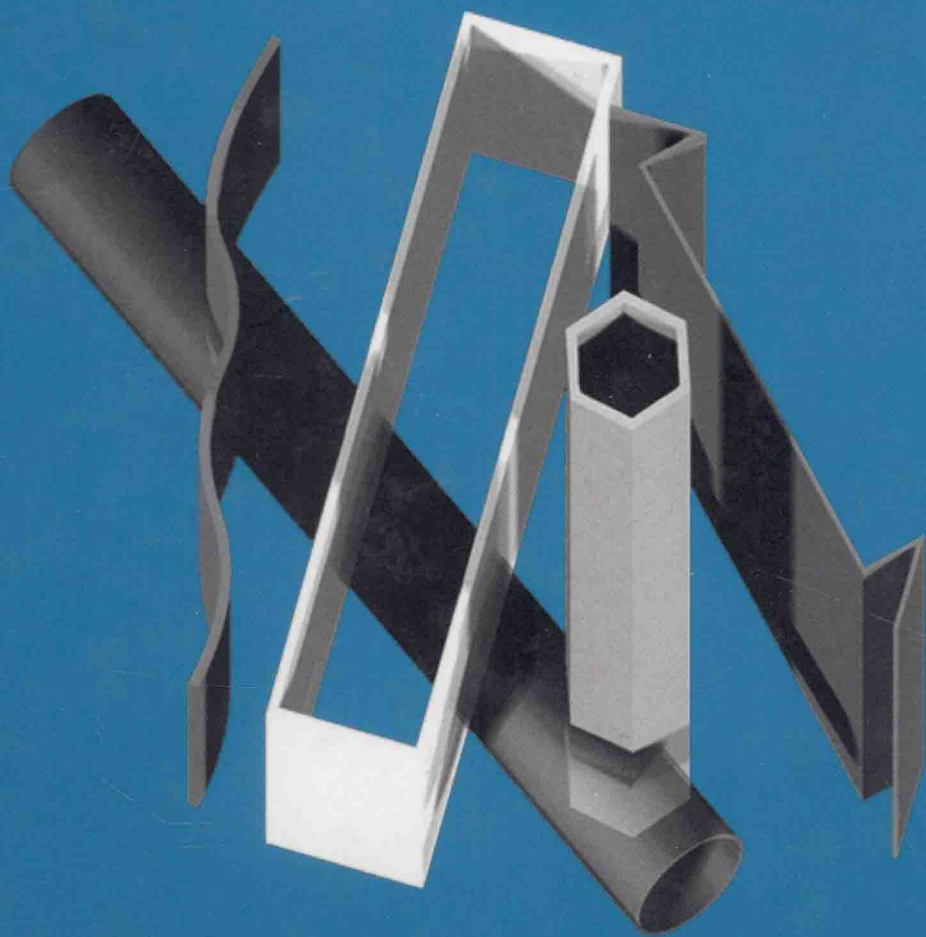


Extrusion

The Definitive Processing
Guide and Handbook



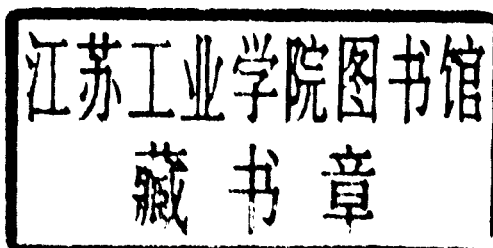
Harold F. Giles, Jr.
John R. Wagner, Jr.
Eldridge M. Mount, III

Extrusion: The Definitive Processing Guide and Handbook

by

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Rochester, New York



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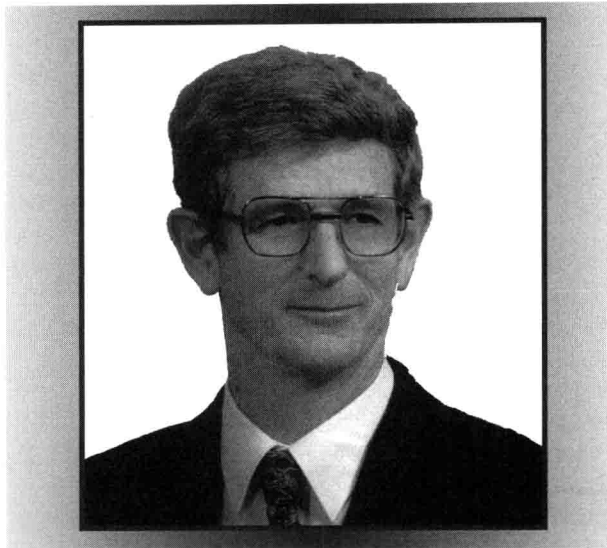
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In memory of my dad, who accomplished more in his 56 years than most strive for in 100 years. To be half as good a father as he was would be a great achievement. I will never be able to teach people in my lifetime what my father taught me by example in one week.

Love,
Craig

In honor of my father. His work in the plastics industry is but a snapshot of a life dedicated to his family. May his ingenuity, creativity, determination, perseverance, and passion be an inspiration for others.

I love you Dad,
Laura

Husband, father, son, brother, friend, dedicated, hardworking, steadfast, persistent, determined, and now...author. Always willing to take on a new challenge, Harold approached each task with enthusiasm, integrity, and perseverance. His love for teaching and sharing his expertise was evident to everyone he came in contact with, from his home life to his work life. He was never too busy to stop and help.

Remembering him always with love and admiration,
Betty

Extrusion processes have long been a staple of the plastics manufacturing industry—so much so that the area has been neglected in contemporary reference literature in spite of the advances in applications and productivity that have been taking place in industry over the last decade. While a number of good books about extrusion processes exist, most are not practical for operators or for educational endeavors. The very basic books do not contain enough information to answer operators' questions, and the more advanced books are too complicated. A number of books are very theoretical and not practical for engineers or managers.

Extrusion: the Definitive Processing Guide and Handbook is meant to fill this void in current and practical information. It consists of seven parts, in largely self-contained modular format, that comprehensively and thoroughly cover basic and advanced thermoplastics processing in the extruder. This work is a practical guide, bringing together both equipment and materials-processing considerations. It can be used as a reference for operators, engineers, and managers, or in educational courses. The chapters include information about extrusion equipment, what is happening to the material in the extruder, the extrusion process, setting up temperature profiles, starting up the extruder, extruder operation, extruder safety, auxiliary equipment, troubleshooting, and coextrusion. Each chapter ends with a list of review questions to reinforce the topics. Many chapters have references for further reading. Application examples are employed throughout, and Part 7 is devoted to extended application illustrations of contemporary applications including compounding, blown film, wire coating, and monofilament.

Certain parts of this book may best serve the information needs of particular manufacturing companies and university or other training courses. For example, companies concerned with polypropylene profiles would benefit from Parts 1, Single-Screw Extrusion, 3, Polymeric Materials, 4, Troubleshooting, and 7, Extrusion Applications.

Companies producing nylon and polyester monofilament will be especially aided by the material in Part 5, Auxiliary Equipment.

Companies engaged in compounding color concentrates on a corotating twin screw extruder will find Parts 2, Twin Screw Extrusion, 3, Polymeric Materials, 4, Troubleshooting, and 5, Auxiliary Equipment, of interest.

And any company doing coextrusion work will be interested in most of the material throughout.

Harold F. Giles, Jr., the primary author of this book, passed away before it was completed. It has been an honor and a privilege to bring Harold's work to completion. We have learned from him and we trust that others who read and study this comprehensive work will be able to profit from his understanding of extrusion processes too. Knowledge is the only thing one can give away and still retain. And in the giving, your own knowledge somehow increases.

John R. Wagner, Jr.
Eldridge M. Mount, III
for Harold F. Giles, Jr.

November 2004

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