

**PACKAGE ID** - 001357IBMPC00 SRIM-2000

**KWIC TITLE** - Stopping Power and Range of Ions in Matter

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**LIMITATION CODE** - UNL                    **AUDIENCE CODE** - UNL

**COMPLETION DATE** - 03/22/2001    **PUBLICATION DATE** - 03/22/2001

**DESCRIPTION** - SRIM is a group of programs which calculate the stopping and range of ions (10ev - 2 GeV/amu) into matter. TRIM (the Transport of Ions in Matter) is the most comprehensive program included. Trim will accept complex targets made of compound materials with up to eight layers, each with different materials. It will calculate both the final 3d distribution of the inner ions and also all kinetic phenomena associated with the ion's energy loss; target damage, sputtering, ionization, and phonon production. All targets atom cascades in the target are followed in detail. It can be used for physics of recoil cascades, physics of sputtering, the stopping of ions in compounds and stopping power for ions in gases; This included radiation damage from neutron , electrons, and photons.

**PACKAGE CONTENTS** - Media Directory; Software Abstract; Media Includes Instruction Manual, Reports in Htm, Executables;

**SOURCE CODE INCLUDED?** - No

**MEDIA QUANTITY** - 1 CD Rom

**METHOD OF SOLUTION** - It uses a full quantum mechanical treatment of ion-atom collisions (this manual refers to the moving atom as an "ion" and all target atoms as "atoms"). This calculation is made very efficient by the use of statistical algorithms which allow the ion to make jumps between calculated collisions and then averaging the collision results over the intervening gap. During the collisions, the ion and atom have a screened Coulomb collision, including exchange and correlation interactions between the overlapping electron shells. The ion has long range interactions creating electron excitations and plasmons within the target. These are described by including a description of the target's collective electron structure and interatomic bond structure when the calculation is set up (tables of nominal values are supplied). The charge state of the ion within the target within the target is described using the concept of effective charge, which includes a velocity dependent charge state and long range screening due to the collective electron sea of the target.

**COMPUTER** - IBM PC

**OPERATING SYSTEMS** - Windows

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**PROGRAMMING LANGUAGES** - NA

**SOURCE CODE AVAILABLE (Y/N)** - N

**UNIQUE FEATURES** - The programs are made so they can be interrupted at any time, and then resumed later. Plots of the calculation may be saved, and displayed when needed (it takes 5 seconds to begin viewing a saved calculation).

**HARDWARE REQS** - About 1.9 Mbyte of disk space must be allocated in order to download the package files. Of these, 70 Kbyte are allocated by the executable files.

**ABSTRACT STATUS** - Released AS-IS 6/19/2001

**SUBJECT CLASS CODE** - Z

**SPONSOR** - NEA

**PACKAGE TYPE** - AS - IS