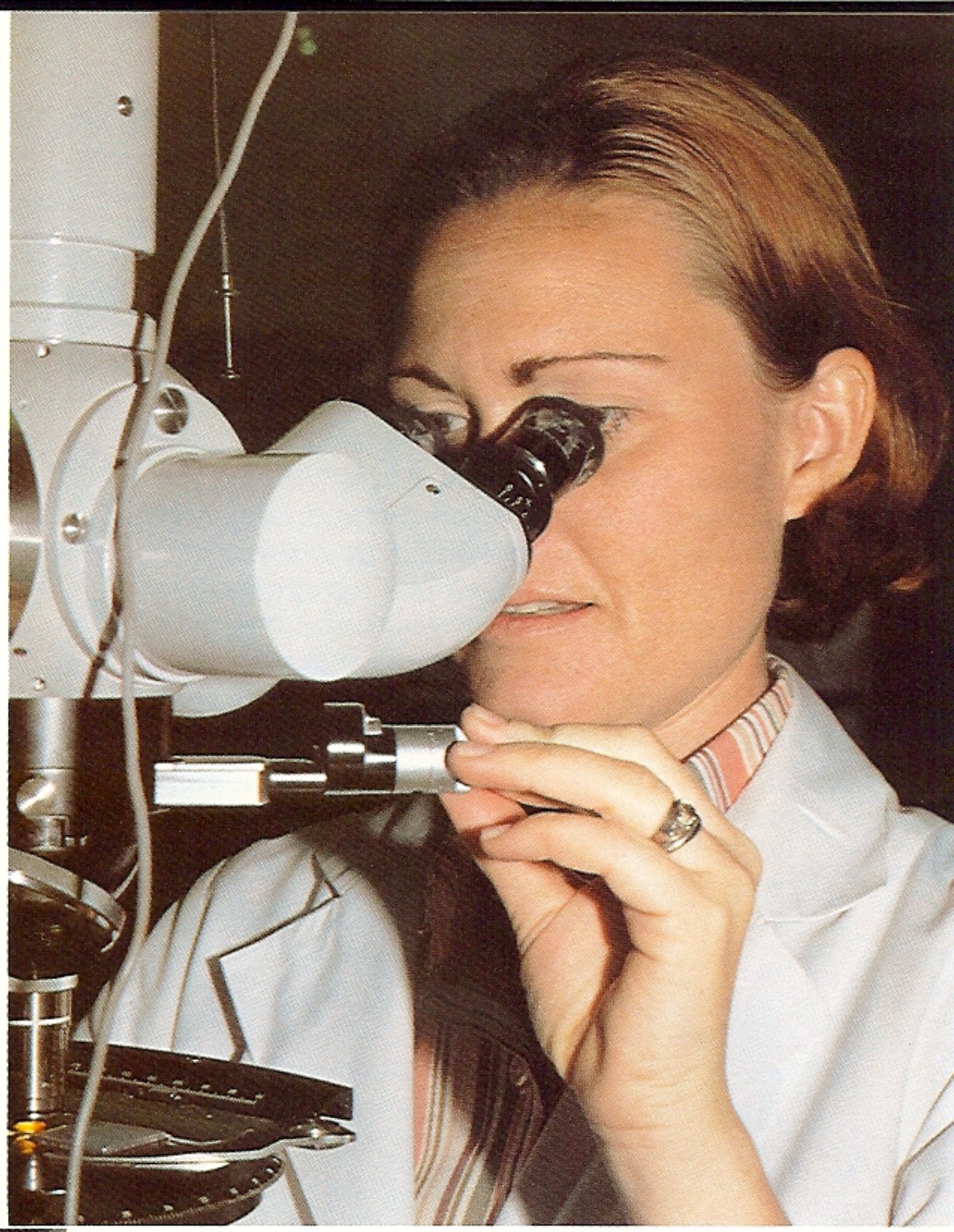
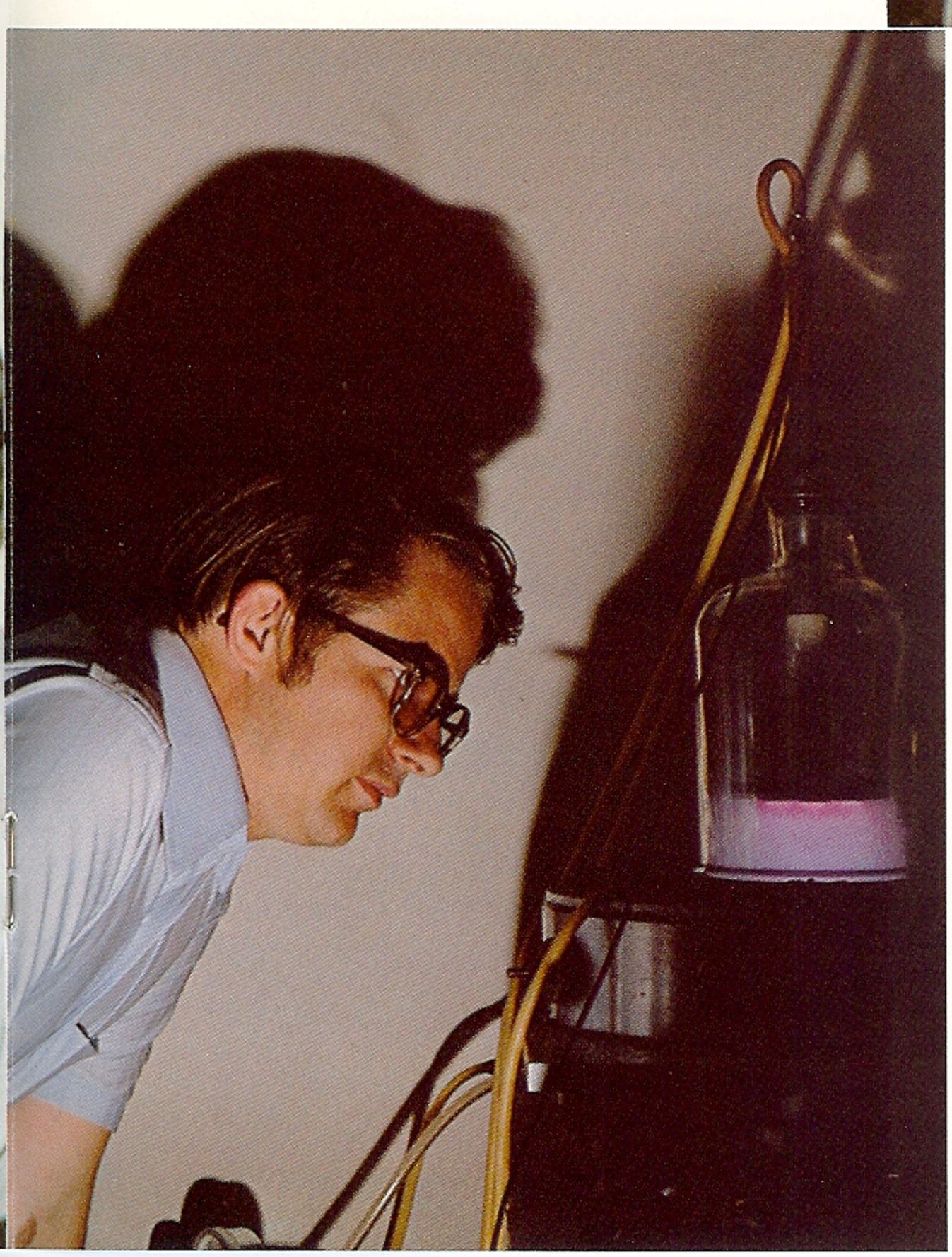
Dr. Laurel Wilkening's major area of research is the study of meteorites and their relationship to asteroids and comets. The research includes both experimental and theoretical approaches. One focus of the research is the understanding of the "geological" processes (e.g., mixing, metamorphism, brecciation, melting and irradiation) which have occurred on meteorite parent bodies. Another focus is the study of primitive meteorites in search of clues to accretion processes. Routinely used methods of analysis of meteorites include petrography, electron microprobe analysis of minerals, scanning electron microscopy and nuclear particle track analysis. Recent projects have included the development of a theoretical model of regolith formation on asteroids, identification of accretionary rims on chondrules in primitive meteorites, and study of the remnants of "foreign projectiles" in brecciated meteorites. Dr. Wilkening is also involved in defining scientific objectives for comet and asteroid missions.





Dr. Kenrick Day takes an experimental approach to problems involving condensation phenomena, optical properties of small particles, and interstellar grains. Small, smoke-sized particles have been produced by electric arc, gas evaporation, and aqueous precipitation techniques, using elements of high cosmic abundance. The physical and optical properties of the resulting materials are then measured, and the results used to help interpret astronomical observations of interstellar grains ranging from the infrared to the ultraviolet.

In addition to the small particle experiments, Dr. Day constructed and is operating a reactive sputtering chamber which can be used to provide a large number of astrophysically significant materials in thin film form. These films are generally well-suited for optical constants measurements. The optical constants are then put into Mie theory calculations to predict the extinction and polarization properties of small particles in a variety of sizes and shapes. This is helpful for making predictions for materials which are not easily produced directly in small-particle form.