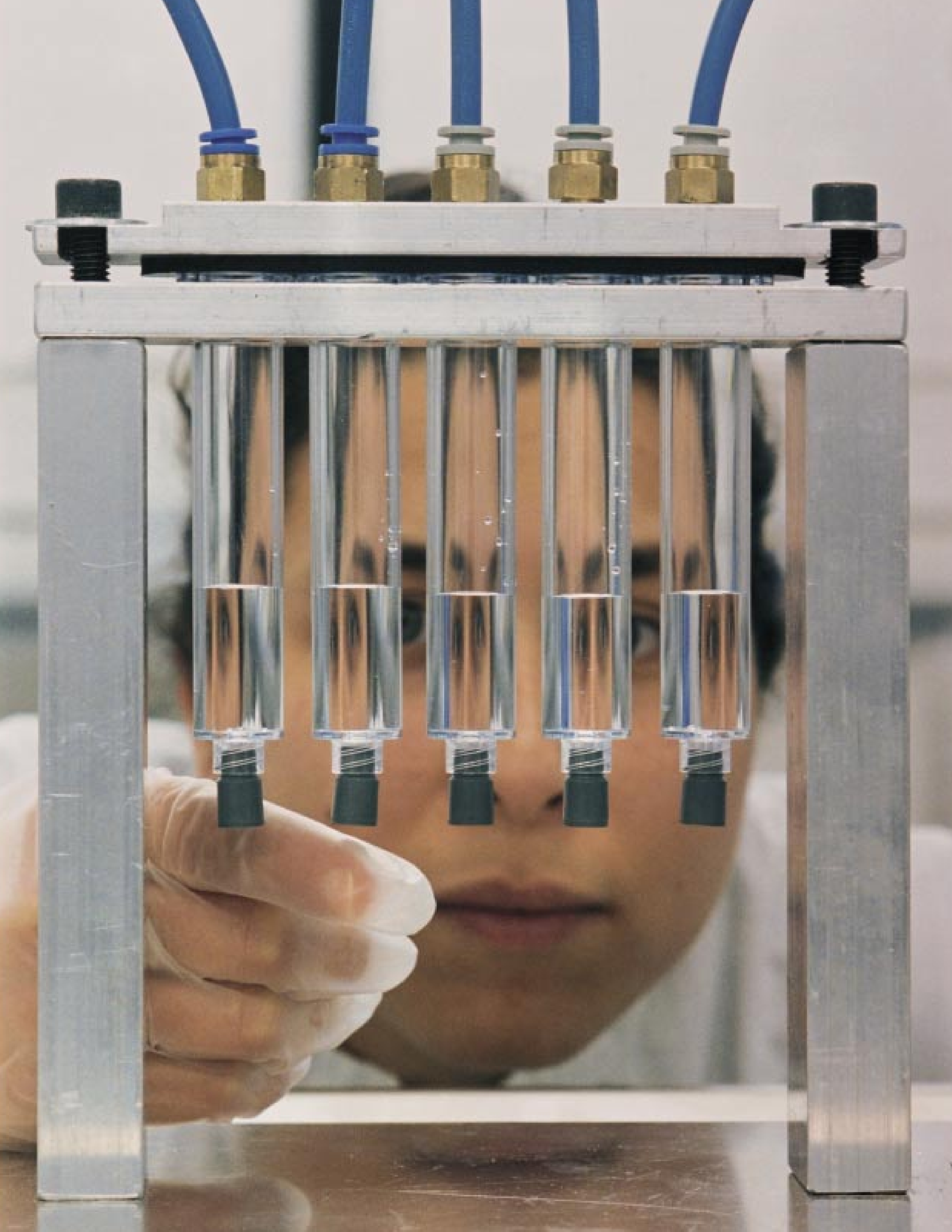

New Solutions in Medicine

With Topas®, Ticona has developed a completely new polymer with excellent properties and launched it onto the market. One of Topas®' many quality applications is its use as a material for prefillable syringes. In a development partnership with Schott that goes back several years, Ticona has made a decisive contribution to the development of the innovative Schott TopPac® syringes.

Emergency medication, proteins, contrast agents and vaccines can be administered to patients using prefillable syringes. From the point of view of doctors and patients alike, these syringes have many advantages: The patient himself can quickly, easily and safely administer the exact dosage in emergency situations, at the hospital, or even at home.

For this reason, prefillable syringes are increasingly being used in the pharmaceutical industry and in medicine. The principle is as simple as it is convincing: Instead of filling the medicine in bottles, the contents of which are then manually filled into a syringe, the active ingredient is filled directly into syringes.

Solutions for the pharmaceutical industry

Schott takes it even one step further: The prefilled syringes are pre-sterilized before being delivered to the pharmaceutical manufacturers. According to what is referred to as the "ready to fill" concept, the pharmaceutical companies can dispense with the washing, drying and sterilizing steps, which are necessary when using bulk syringes, thus making the filling and packaging process simpler and more cost-effective. The economic advantages are plain to see: There are fewer plant, personnel and maintenance costs, and less space is required.

The Schott Glass Group has been globally active in such highly sensitive pharmaceutical primary packaging for a long time. In the past, Schott offered syringes and vials produced from tubing glass through its subsidiary forma vitrum ag, and now also offers prefillable syringes and vials made of the Ticona polymer Topas® through Schott Polymer GmbH. These products are marketed under the name Schott TopPac® and have been produced on a large scale since mid-2002. Dr. Ralf Holschumacher, managing director of Schott Polymer GmbH, believes that the company's success can be traced to the broad range of syringes as well as to the company's focus on its customers: "We can supply solutions to our customers in the pharmaceutical industry for a variety of pharmaceutical packaging. With the Schott TopPac® syringe made of the high performance polymer Topas®, we are able to offer pharmaceutical manufacturers solutions for even more demanding applications than before. That gives us a stronger position with our customers."

Topas® syringes are leading on the market

Ralf Holschumacher can easily name several advantages of the Schott TopPac® syringe over conventional glass syringes: They are shatter-proof, lighter and, because of their chemical structure, they, unlike glass, emit no ions or heavy metal traces which could affect the medicine.

The syringes can be easily sterilized and allow the medicine contained in them to be stored for long periods of time due to their excellent barrier properties.

The advantages are obvious. The syringe can also be used for demanding applications. And with this material, the filling process is simpler, safer, and more cost-effective for the customers.

Our customer is our partner for success

Since 1998, the development teams of Schott and Ticona have been working together on using the new polymer in prefillable syringes. Ralf Holschumacher: "We were immediately convinced by Topas®. But of course there were still lots of obstacles to overcome before we could be sure that Topas® syringes represent a real improvement over normal syringes." At that time, Topas® was still a novelty on the polymer market. Based on the technology advantage in the metallocene catalyst research, the polymer researchers from Hoechst, and later Ticona, developed the new high performance polymer cycloolefin copolymer, which has been marketed under the brand name Topas® since the 1990s. In 2000, Ticona commissioned a production facility at the Oberhausen plant, which, with a capacity of 30,000 tons per year, launched Ticona as a market leader for this polymer.

Now it is up to the Topas® team to open up additional markets for the new polymer. Particularly crucial to success is the close contact with the customers, which extends far beyond the conventional supplier-customer relations. At the end of the day, new applications and products must be developed together. Dr. Alexandra Jacobs, Topas® product manager for medical applications, was in product development from the beginning: "The development partnership with Schott helped us tremendously. Without a direct link to the colleagues here, we would have needed a lot longer to develop the polymer to the point where it is suitable for this demanding application." ◄

3a

3b

1. In the analytical lab, Schott TopPac® syringes are checked under pressure for leakage.

2. Dr. Ralf Holschumacher, managing director for Schott Polymer GmbH, develops innovative packaging solutions for customers in the pharmaceutical industry together with his team.

3a/b. The injection molded syringe bodies are placed into transport nests.

New polymer, new applications

With the help of metallocene catalysts, Topas® is copolymerized from a cycloolefin called norbonene, and ethylene. Through this combination, the cycloolefin copolymer displays properties such as optical clarity, bio-compatibility and moisture impermeability, making Topas® an innovative alternative material for many areas.
A further decisive advantage of Topas® is the variability of its properties. Depending on the ratio of ethylene to norbornene, properties such as dimensional stability under heat, for instance, can be altered according to need. Examples of applications are pharmaceutical blister packs, food packaging, diagnostic articles such as microtiter plates, lenses, or toner binder for printers and copiers.