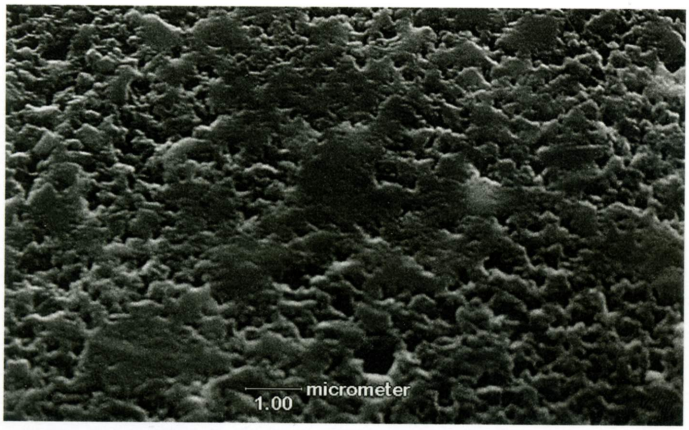


Fig. A5 *10,000-fold magnification of the paper surface of Magno Star.*

doubled. Doing so would not affect the principal properties of the rough, matt surface. The adherence of pigments to the paper would be improved and the decreased absorption of binders contained in the ink would lead to a less sensitive printed image. Unfortunately, this would also mean that the printing ink would take significantly longer to dry, which would cancel out all advantages achieved by the improved rub resistance.

The search for the ideal combination of properties goes on, but so far, every new adjustment has only produced yet another compromise that could very well have negative effects on other properties and lead to loss of quality in terms of requirements set by other sectors of the industry.

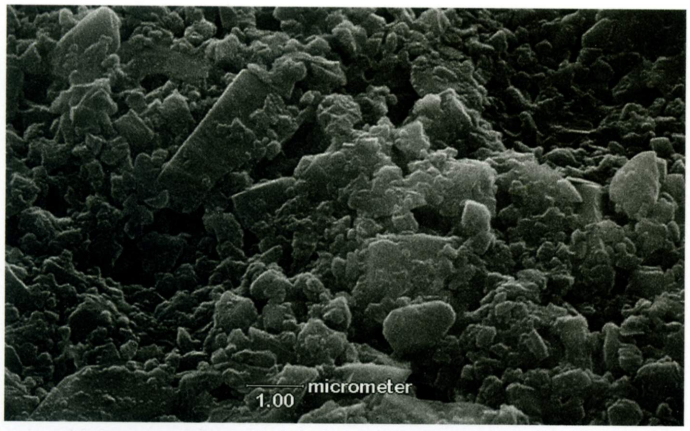


Fig. A6 *10,000-fold magnification of the paper surface of Magno Satin.*

## Printing on matt paper

Due to the surface characteristics of matt papers mentioned above, printing and especially binding of this type of paper, continues to pose problems to many professionals. Invariably, the low degree of rub resistance is mentioned as the major source of difficulties.

Rubbing is the effect of repeated relative shifting of two touching surfaces under a certain amount of pressure. The measure of resistance of a material to this rubbing effect is known as rub resistance.
During different operations in the printing process, the ink layer on a printing sheet comes into contact with various surfaces, but mostly, under normal conditions, with another sheet of paper. When two printed sheets of paper touch, the only thing separating the two is a layer of ink. When mechanical forces are put to bear upon these touching sheets of paper, the resistance of the ink layer and, more important, the topography of the surface becomes a vital factor. Strongly magnified, the topography of a matt paper has the appearance of a landscape with numerous hills and valleys. In the case of two sheets of paper grazing (rubbing) each other, the mechanical forces released concentrate on the tops of the hills, easily leading to damages to the relatively thin film of ink in those positions and to contamination of non-printed parts of the paper (Fig. A5 and A6).

This presents a continuous challenge to the resistance of the print job, not only at the actual output of paper from the printing machine, but even more so in consecutive stages, such as stacking, wrapping, transport and all binding operations. Unfortunately, the topography of a matt (relatively coarse) surface does not allow for maximum rub resistance. The best that can be attained is optimal rub resistance within the given limits.