1. Record Nr. UNINA9910155315703321

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| Titolo | Attachment Structures and Adhesive Secretions in Arachnids / / by Jonas O. Wolff, Stanislav N. Gorb |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2016 |
| ISBN | 3-319-45713-6 |
| Edizione | [1st ed. 2016.] |
| Descrizione fisica | 1 online resource (XII, 184 p. 57 illus., 38 illus. in color.) |
| Collana | Biologically-Inspired Systems, , 2211-0593 ; ; 7 |
| Disciplina | 574.1 |
| Soggetti | Entomology<br>Anatomy<br>Biomaterials<br>Tribology<br>Corrosion and anti-corrosives<br>Coatings<br>Materials—Surfaces<br>Thin films<br>Animal Anatomy / Morphology / Histology<br>Tribology, Corrosion and Coatings<br>Surfaces and Interfaces, Thin Films |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references at the end of each chapters and index. |
| Nota di contenuto | 1. Overview -- 2. Mechanical attachement devices -- 3. Tape- and spatulate-shaped microstructures -- 4. Nano-Fibril -- 5. Mushroom-shaped microstructures -- 6. Suction cups -- 7. Soft adhesive tapes.-8. / Adhesive secretions -- 9. Biological function and evolutionary aspects -- 10. Comparative contact mechanics -- 11. Biomimetics: What can we learn from arachnids?. |
| Sommario/riassunto | This book surveys attachment structures and adhesive secretions occurring in this class of animals and discusses the relationships between structure, properties, and function in the context of evolutionary trends, and biomimetic potential. Topics comprise mechanical attachment devices, such as clamps, claws, hooks, spines |

and wraps, as well as hairy and smooth adhesive pads, nano-fibrils, suction cups, and viscid and solidifying adhesives. Attachment is one of the major types of interactions between an organism and its environment. There are numerous studies that deal with this phenomenon in lizards, frogs, insects, barnacles, mussels and echinoderms, but the second largest class of animals, the Arachnida, was highly neglected so far. The authors demonstrated that most arachnid adhesive structures are highly analogous to those of insects and vertebrates, but there are also numerous unique developments with some intriguing working principles. Because arachnid attachment organs have a very strong potential of technological ideas for the development of new materials and systems, inspirations from biology could also be interesting for a broad range of topics in materials and surface engineering.