Preface

The distinguished editors, Gerhard Gompper and Michael Schick, have had the inspired idea of doing for the burgeoning field of "Soft Condensed Matter" in the first half of the twenty-first century what the famous Domb–Green–Lebowitz series on "Phase Transitions and Critical Phenomena" did for that subject in the latter half of the twentieth; viz., providing an authoritative account of the field's principles and applications for its current practitioners, and instructing and inspiring a new generation of scientists.

What is "soft condensed matter" and where did the name come from? My own vague memories have now been considerably sharpened by the recollections of P.-G. de Gennes, to whom I am grateful for some of this history. The expression "soft matter" (*matière molle* in French, where it is a "double entendre") very likely originated in the research group of de Gennes, then in Orsay, around 1970. The group included M. Veyssié and others. The expression, as the name of a now hugely important subfield of physics, has been universally accepted.

The status of the field as of 1995 was assessed by de Gennes (1995) in his definitive review, "Soft matter: birth and growth of concepts". The phenomena encompassed by it are characterized by large responses to small perturbations. This is analogous to, but, as de Gennes explains, different from, the large magnetic susceptibility near a Curie point or great compressibility of a fluid near its critical point. "Soft" materials include polymers, liquid crystals, colloids, gels, surfactant phases, and many other such objects of study. One can see "soft matter" in the subtitle, and as the title of Part I, of *Fragile Objects* (de Gennes and Badoz 1996), echoing the title of de Gennes' 1994 Dirac Lecture, *Soft Interfaces* (de Gennes 1997). The program "SOFT COMP", for soft composites, is an EU "Network of Excellence". In the commentary "Viruses and the physics of soft condensed matter" (Zlotnick 2004), commenting on the beautiful article "Origin of icosohedral symmetry in viruses" (Zandi et al. 2004), one reads that: "Physicists studying soft condensed matter provide

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a framework that will help interpret and rationalize virological experimental observations." As we see, the reach of this subject is vast.

This publishing project is already most promising. The editors, whose own excellent volume *Self-Assembling Amphiphilic Systems* for the Domb–Lebowitz series (Gompper and Schick 1994) would be an appropriate model for these reviews, are to be congratulated for having recruited great experts to write these authoritative articles for this series' inaugural volume. The high quality of this beginning allows me to be confident of the series' success, to which I look forward with much pleasure.

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