Dielectrics with good charge storage capability, so called charge electrets, are non or weakly-polar materials. Despite their non-polar nature porous charge electrets with internally charged surfaces can exhibit very pronounced piezoelectricity. Such systems have been termed ”Ferroelectrets” and they have been receiving growing attention over the last few years. Their puzzling and unexpected features resemble very much those normally known from traditional ferroelectrics: Ferroelectrets are piezo- and pyroelectric, their polarization can be reversed by means of an external field and electrical as well as mechanical hysteresis loops were observed. As conventional ferroelectrics are different and more complicated than ferromagnets, so are ferroelectrets different and more complex than most ferroelectrics. Here we report about the very different charging and switching mechanism in ferroelectrets, both in simple model-systems and in less simple foam structures. These mechanism are crucial and form the basis for the striking phenomenological similarities to ferroelectrics. We also want to address some of the specific peculiarities and pitfalls related to present ferroelectrets and their characterization. Interfacial charge injection at high electric fields and anelastic non-linearities, for instance, can be the cause for false ferroelectric-like hysteresis effects which do not reflect any polarization reversal. Our contribution is an attempt towards a more comprehensive picture of how much ferroelectrets behave like ferroelectrics.

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