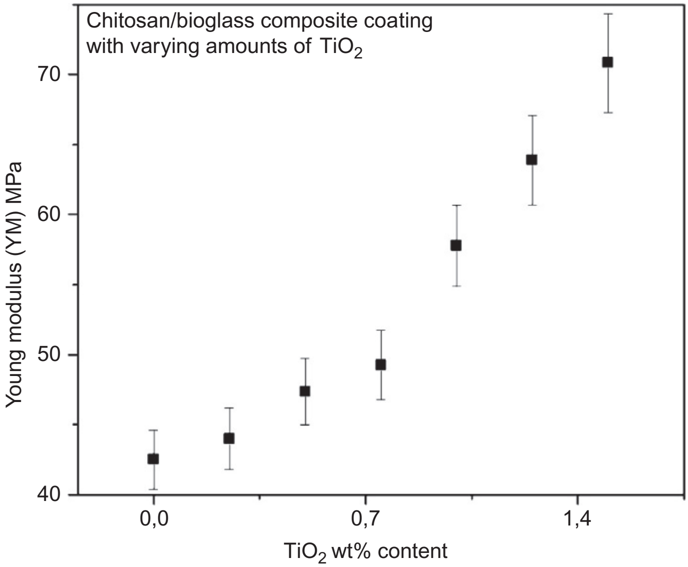

FIG. 1.5 Young's modulus of chitosan-BGs-TiO_2 composite coatings vs the TiO_2 content. *(Reproduced with permission from Clavijo, S., Membrives, F., Quiroga, G., Boccaccini, A. R., Santillán, M. J., 2016. Electrophoretic deposition of chitosan/Bioglass® and chitosan/Bioglass®/TiO2 composite coatings for bioimplants. Ceram. Int. 42, 14206–14213 of Elsevier.)*

only allowed the motion of highly charged particles. Porosity can be beneficial for increasing the interaction of the coatings with the surrounding tissue; however, the presence of pores leads to low attachment of the coating to the substrate limiting the corrosion protection ability of the coatings. These coatings have shown a reduction of corrosion current density of 50% in comparison to the substrate. Fig. 1.6 shows the polarization curves of the coated and bare substrates. The coating is seen to shift the polarization curve to lower current densities, which means the achievement of higher corrosion resistance (Mehdipour and Afshar, 2012).

There are several other biopolymers being considered for producing composite coatings by EPD at room temperature. For example, polyester composites with BG fillers can be deposited by EPD. Nagao et al. (2012) developed a sulfone polyester with BG particles as a composite coating for biomedical applications. The pure polyester acts as a matrix where the BG particles are inhibited for release. Simulated body fluid (SBF) studies showed that after 1 week of immersion the formation of spherical particles was observed, that were confirmed by XRD to be hydroxyapatite (Nagao et al., 2012). Poly(2-oxazoline)s with BG particles deposited on stainless steel were studied by Hayashi and Takasu (2015). Initially, they developed a polymerization process in which a new initiator, *N*-methyl bis[(nonafluorobutane)sulfonyl]-imide Nf_2NMe, was synthesized. Afterwards, EPD was used to generate a composite on top of