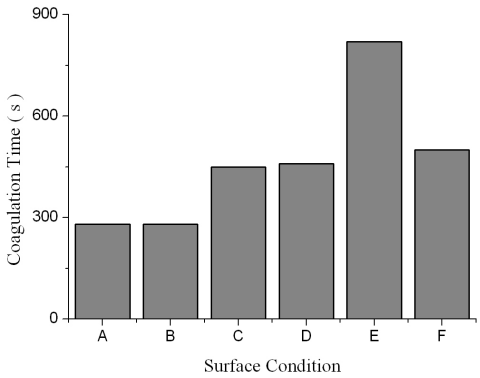

Figure 3. FTIR spectra of (1) methane plasma polymer , (2) heparin-isopropanol methane plasma polymer, (3) sodic heparin

This result can be attributed to the presence of islands of heparin on the surface of the sample that were not completely covered by the thin film from heparin-isopropanol methane plasma (micro-graphs not shown in this paper). These islands are dispersed on the surface and have irregular shapes. Another important result is also showed in this figure. The coagulation times of blood in contact of samples (C) and (D) (glass coated with heparin-isopropanol methane plasma polymers 40 and 10 nm thick respectively) are near fresh blood coagulation time. These aspects are important because they indicate an improvement in the performance of the materials most widely used nowadays in devices that operate in contact with blood. However , the material (E) (substrate coated by sodic heparin and polymer from heparin-isopropanol methane plasma) despite having high coagulation time, it is not suitable for use because it may induce or cause haemorrhages and cardiovascular complications.

4. Conclusions

It was shown that heparin-isopropanol methane plasma process could improve the haemocompatibility of glass substrates. The best results were obtained with heparin-isopropanol methane plasma polymers 40 and 10 nm thick. The coagulation times of blood in contact with such modified glass increased up to 65% compared to the values measured with pristine glass surface and glass coated by methane plasma polymer. Therefore one may conclude that the plasma surface treatment was successful for obtaining haemocompatible surfaces.

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