

Primena Nuklearne Magnetne Rezonance na materijale u čvrstom stanju

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Nuklearna Magnetna Rezonanca (NMR) čvrstog stanja je veoma popularna i korišćena metoda u istraživanju materijala u čvrstom stanju. Prednost ove nedestruktivne metode u odnosu na druge spektroskopske tehnike je u njenoj sposobnosti da pruži informacije na atomskom nivou kako o strukturi, tako i o molekularnoj dinamici (pokretljivosti) strukturnih grupa. Osim toga izuzetno je važan i multinuklearni aspekt ove metode. t.j. mogućnost dobijanja informacija o različitim jezgrima sa spinom: ^1H , ^{13}C , ^{31}P , ^{27}Al , ^{23}Na , ^{15}N ...

U ovom predavanju biće diskutovane primene NMR-a čvrstog stanja na sledeće materijale: polimeri, farmaceutski proizvodi/lekovi, provodljive polimere i njihove nanostrukture, stakla, alumosilikatne materijale, geopolimeri... Tokom diskusije svakog materijala biće predstavljen problem u karakterizaciji korišćenjem drugih metoda s osvrtnom na rešenje problema korišćenjem NMR-a čvrstog stanja.



The application of Nuclear Magnetic Resonance to solid materials

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Solid-state NMR represents an advanced and broadly applied spectroscopic technique for structural investigations of solid materials. Compared to other methods, the main advantage of this non-destructive technique is its ability to give information at the atomic level about the structure and molecular dynamics (mobilities) using the NMR interactions. In addition, the crucial aspect of this method is a multinuclear approach, i.e. the opportunity to extract information about various nuclei with spin: ^1H , ^{13}C , ^{31}P , ^{27}Al , ^{23}Na , ^{15}N ...

The presentation will refer to the application of solid-state NMR spectroscopy in investigating various materials, such as polymers, drugs-pharmaceuticals, conducting polymers and their nanostructures, and glass & aluminosilicates. The problem of getting information using other methods will be presented with an overview of a solution to the problem using solid-state NMR.